TOS 102

# Bulletin of the British Ornithologists' Club

THE NATURAL HISTORY MUSEUM
- 8 DEC 2011
PRESENTED TRING LIBRARY

Volume 131 No. 4
December 2011

SHOUT
SHARE
IT

## FORTHCOMING MEETINGS

See also BOC website: **http://www.boc-online.org**

**MEETINGS** are open to **all**, not just BOC members **and are free**.

**Evening meetings** are in Tower Rooms, Section A, Sherfield Building, Imperial College, South Kensington, London, SW7 2AZ. The entrance is opposite the Queen's Tower in the main quadrangle. The nearest Tube station is at South Kensington. For maps, see: http://www3.imperial.ac.uk/campusinfo/southkensington

---

**27 March 2012 at 6.00 pm—Julian Greenwood—*A long-term study of the Black Guillemot colony at Bangor, Co. Down***

*Abstract*: The talk will look at the history of Black Guillemots *Cepphus grylle* nesting in Bangor, Co. Down, and the patterns revealed by this long-term study. Results demonstrate that an advance in timing of breeding is associated with temperature rise in seawater and hence can be related to climate change. Evidence is also gathering to show that Black Guillemots don't always play 'happy families', with both site and mate unfaithfulness occurring. Ringing recoveries have revealed the dispersal patterns of young birds around the Irish coastline.

*Biography*: Julian Greenwood is co-ordinator of science with education at Stranmillis University College, Belfast, teaching on BEd, PGCE, MEd and lifelong-learning programmes. He has had a lifelong interest in natural history, particularly birds, and for over 25 years has been working on Black Guillemots in Northern Ireland. He presently serves on RSPB Council.

**The evening will commence with the talk beginning at 6.00 pm.** After the talk the cash bar will open so that attendees can socialise. At approximately 7.30 there will be a light buffet supper (sandwiches etc.) costing **£15 per person** for those who have ordered it at least two weeks in advance. Vegetarian and gluten-free options will be available for those who have requested them when booking.

*Those wishing to order the buffet supper should apply to the Chairman (address below) by* ***13 March 2012.***

*There is* ***no charge*** *to attend the talk but to comply with Imperial College requirements those wishing to attend must notify the Chairman no later than* ***Monday 26 March 2012.***

---

**12 June 2012 at 5.15 pm—Annual General Meeting; 5.40 pm—Special General Meeting**

**6.00 pm** short talks— if you wish to give a talk, which should last 10–15 minutes, please send details to Robert Prŷs-Jones (e-mail: r.prys-jones@nhm.ac.uk) no later than 15 January 2012.

*Those wishing to order the buffet supper should apply to the Chairman (address below) by* **29 May 2012**

*To comply with Imperial College Requirements, those wishing to attend the talks must notify the Chairman no later than* ***Monday 11 June 2012.***

---

**18 September**—*details to be announced*

*Those wishing to order the buffet supper should apply to the Chairman (address below) by* ***4 September 2012.***

*To comply with Imperial College requirements, those wishing to attend the talk must notify the Chairman no later than* ***Monday 17 September 2012.***

---

**The Chairman**: Helen Baker, 60 Townfield, Rickmansworth, Herts. WD3 7DD, UK. Tel. +44 (0)1923 772441. E-mail: helen.baker60@tiscali.co.uk

THE NATURAL HISTORY MUSEUM
- 8 DEC 2011
PRESENTED
TRING LIBRARY

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 131 No. 4 Published 6 December 2011

# CLUB ANNOUNCEMENTS

**Chairman's message**

The Club's current Rules, which date from 2000, need updating. Rule 40 permits us to do this. The Charity Commission produced a new model constitution for Charitable Associations in November 2007 and the new draft Rules, based on that model, appear below. Rule 26 permits the Club to make Bye-laws which can be amended at an AGM and which do not need to be approved by the Charity Commission. We have made use of this provision. The draft Rules and Bye-laws will be the subject of a Special General meeting which will follow the AGM on 12 June 2012. If adopted, the Rules will then be submitted to the Charity Commission for approval.

*Helen Baker*

---

**The following is the full text of the Rules which the Club proposes to adopt.**

**RULES OF THE BRITISH ORNITHOLOGISTS' CLUB (Registered Charity No 279583) ('the Club')**

Adopted on the .....

## PART 1

**1. Adoption of the Rules**

The Club will be administered and managed in accordance with the provisions in parts 1 and 2 of these Rules.

**2. The Name**

The Club's name is the British Ornithologists' Club.

**3. The Objects**

The Club's objects are to promote scientific discussion between members and others interested in ornithology and to facilitate the dissemination of scientific information concerned with ornithology. The Club shall maintain its special interest in avian systematics, taxonomy and distribution.

**4. Application of the Income and Property**

(1) The income and property of the Club shall be applied solely towards the promotion of the Objects.

(2) A Trustee may pay out of, or be reimbursed from, the property of the Club reasonable expenses properly incurred by him or her when acting on behalf of the Club.

(3) None of the income or property of the Club may be paid or transferred directly or indirectly by way of dividend, bonus or otherwise by way of profit to any member of the Club. This does not prevent:
   (a) a member who is not also a Trustee from receiving reasonable and proper remuneration for any goods or services supplied to the Club;
   (b) a Trustee from buying goods or services from the Club upon the same terms as other members or members of the public;
   (c) the purchase of indemnity insurance for the Trustees against any liability that by virtue of any rule of law would otherwise attach to a Trustee or other officer in respect of any negligence, default, breach of duty or breach of trust of which he or she may be guilty in relation to the Club but excluding:
      i. fines;
      ii. costs of unsuccessfully defending criminal prosecutions for offences arising out of fraud, dishonesty or wilful or reckless misconduct of the Trustee or other officer;
      iii. liabilities to the Club that result from conduct that the Trustee or other officer knew or ought to have known was not in the best interests of the Club or in respect of which the person concerned did not care whether that conduct was in the best interests of the Club or not.

(4) No Trustee may be paid or receive any other benefit for being a Trustee.
(5) In this Clause 4, 'Trustee' shall include any person, firm or company connected with the Trustee.

**5. Dissolution**

(1) If the members resolve to dissolve the Club the Trustees will remain in office as Club Trustees and be responsible for winding up the affairs of the Club in accordance with this clause.
(2) The Trustees must collect in all the assets of the Club and must pay or make provision for all the liabilities of the Club.
(3) The Trustees must apply any remaining property or money:
  (a) directly for the Objects;
  (b) by transfer to any Charity or charities for purposes the same as or similar to those of the Club;
  (c) in such other manner as the Charity Commission for England and Wales ('the Commission') may approve in writing in advance.
(4) The members may pass a resolution before or at the same time as the resolution dissolving the Club specifying the manner in which the Trustees are to apply the remaining property or assets of the Club and the Trustees must comply with the resolution if it is consistent with paragraphs (a)–(c) inclusive in sub-clause (3) above.
(5) In no circumstances shall the net assets of the Club be paid to or distributed amongst the members of the Club.
(6) The Trustees must notify the Commission promptly that the Club has been dissolved. If the Trustees are obliged to send the Club's accounts to the Commission for the accounting period which ended before its dissolution, they must send the Commission the Club's final accounts.

**6. Amendments**

(1) The Club may amend any provision in Part 1 of these Rules provided that:
  (a) no amendment may be made that would have the effect of making the Club cease to be a Charity at law;
  (b) no amendment may be made to alter the Objects if the change would not be within the reasonable contemplation of the members or donors of the Club;
  (c) no amendment may be made to clause 4 without the prior written consent of the Commission;
  (d) any resolution to amend a provision of Part 1 of these Rules is passed by not less than two-thirds of the members present and voting at a general meeting.
(2) Any provision contained in Part 2 of these Rules may be amended, provided that any such amendment is made by resolution passed by a simple majority of members present and voting at a general meeting.
(3) A copy of any resolution amending these Rules shall be sent to the Commission within 21 days of its being passed.

## PART 2

**7. Membership**

(1) Membership is open to individuals over 18 who are approved by the Trustees;
(2) An individual may become a member on payment of the appropriate annual subscription and subject to confirmation by the Trustees at their next meeting.
(3) Membership is not transferable to anyone else.
(4) The Trustees must keep a register of names and addresses of the members which must be made available to any member upon request.

**8. Termination of Membership**

(1) Membership is terminated if:
  (a) the member dies;
  (b) the member resigns by written notice to the Club unless, after the resignation, there would be fewer than two members;
  (c) the member is removed from membership by a resolution of the Trustees that it is in the best interests of the Club that his or her membership is terminated. A resolution to remove a member from membership may only be passed if:
  (d) the member has been given at least 21 days' notice in writing of the meeting of the Trustees at which the resolution will be proposed and the reasons why it is proposed;
  (e) the member or, at the option of the member, the member's representative (who need not be a member of the Club) has been allowed to make representations to the meeting.
(2) The Trustees shall be entitled to terminate the membership of any member whose subscription has not been paid within six months of falling due, provided that such member has been given written notice calling for payment of the subscription, and that the notice has not been complied with within one month of its date.

**9. General Meetings**

(1) An Annual General Meeting must be held not later than 30 June every year on a date to be fixed by the Trustees.
(2) All general meetings other than Annual General Meetings shall be called Special General Meetings.
(3) The Trustees may call a Special General Meeting at any time.
(4) The Trustees must call a Special General Meeting if requested to do so in writing by at least ten members or one-tenth of the membership, whichever is the greater. The request must state the nature of the business that is to be discussed. If the Trustees fail to hold the meeting within 28 days of the request, the members may proceed to call a special general meeting but in doing so must comply with the provisions of these Rules.

**10. Notice**

(1) The minimum period of notice required to hold any general meeting of the Club is 21 clear days from the date on which the notice is deemed to have been given.
(2) The notice must specify the date, time and place of the meeting and the general nature of the business to be transacted. If the meeting is to be an Annual General Meeting, the notice must say so.
(3) The notice must be given to all members and to the Trustees.

**11. Quorum**

(1) No business shall be transacted at any general meeting unless a quorum is present.
(2) A quorum is ten members entitled to vote upon the business to be conducted at the meeting.
(3) If no quorum is present at the meeting within 15 minutes of the time specified for the start of the meeting the members present at that time shall constitute the quorum for that meeting.

**12. Chair**

(1) General meetings shall be chaired by the person who has been elected as Chair.
(2) If there is no such person or he or she is not present within 15 minutes of the time appointed for the meeting it shall be chaired by the person who has been elected as Vice-Chair.
(3) If there is no such person or he or she is not present within 15 minutes of the time appointed for the meeting, a Trustee nominated by the Trustees shall chair the meeting.
(4) If there is only one Trustee present and willing to act, he or she shall chair the meeting.
(5) If no Trustee is present and willing to chair the meeting within 15 minutes after the time appointed for holding it, the members present and entitled to vote must choose one of their number to chair the meeting.

**13. Votes**

(1) Each member shall have one vote but if there is an equality of votes the person who is chairing the meeting shall have a casting vote in addition to any other vote he or she may have.
(2) A resolution in writing signed by each member who would have been entitled to vote upon it had it been proposed at a general meeting shall be effective. It may comprise several copies each signed by one or more members.

**14. Officers and Trustees**

(1) The Club and its property shall be managed and administered by a committee comprising the Officers and other members elected in accordance with these Rules. The Officers and other members of the committee shall be the Trustees of the Club and in these Rules are together called 'the Trustees'.
(2) The Club shall have the following Officers:
    - A Chair
    - A Vice-Chair
    - An Honorary Secretary
    - An Honorary Treasurer.
(3) A Trustee must be a member of the Club.
(4) No one may be appointed a Trustee if he or she would be disqualified from acting under the provisions of Rule 17.
(5) In addition to the four Officers there shall be not less than three and not more than five other Trustees.
(6) A Trustee may not appoint anyone to act on his or her behalf at meetings of the Trustees.

**15. The Appointment of Trustees**

(1) The Club in general meeting shall elect the Officers and the other Trustees.
(2) The Trustees may nominate any person who is willing to act as a Trustee. Subject to sub-clause (5)(b) of this rule, they may also nominate Trustees to act as officers.
(3) Any member wishing to nominate a candidate shall forward the nomination to the Honorary Secretary in writing signed by the nominating Member and five other members, with confirmation that the candidate has agreed to be nominated. To be valid, such a nomination shall reach the Honorary Secretary no later than 31 January preceding the Annual General Meeting.

(4) Each Trustee shall retire with effect from the conclusion of the fourth Annual General Meeting after his or her appointment and with the exception of the Honorary Secretary and Honorary Treasurer, shall not be eligible for re-election to the same office or position at that Annual General Meeting.
   (a) (The election of a Trustee must not cause the number of Trustees to exceed the number fixed by rule 14(5) above.
   (b) The Trustees may not appoint a person to be an Officer if a person has already been elected or appointed to that office and has not vacated the office.

(6) The Trustees may co-opt a Member ('the Co-opted Member') to act as an Officer or other Trustee to fill temporarily, until the conclusion of the next Annual General Meeting, any vacancy that may occur. No more than three Co-opted Trustees are permitted at any one time.

**16. Powers of Trustees**

(1) The Trustees must manage the business of the Club and have the following powers in order to further the Objects (but not for any other purpose):
   (a) to raise funds. In doing so, the Trustees must not undertake any substantial permanent trading activity and must comply with any relevant statutory regulations;
   (b) to buy, take on lease or exchange, hire or otherwise acquire any property and to maintain and equip it for use;
   (c) to sell, lease or otherwise dispose of all or any part of the property belonging to the Club. In exercising this power, the Trustees must comply as appropriate with sections 36 and 37 of the Charities Act 1993, as amended by the Charities Act 2006;
   (d) to borrow money and to charge the whole or any part of the property belonging to the Club as security for repayment of the money borrowed. The Trustees must comply as appropriate with sections 38 and 39 of the Charities Act 1993, as amended by the Charities Act 2006, if they intend to mortgage land;
   (e) to co-operate with other charities, voluntary bodies and statutory authorities and to exchange information and advice with them;
   (f) to establish or support any charitable trusts, associations or institutions formed for any of the charitable purposes included in the Objects;
   (g) to acquire, merge with or enter into any partnership or joint venture arrangement with any other Charity formed for any of the Objects;
   (h) to set aside income as a reserve against future expenditure but only in accordance with a written policy about reserves;
   (i) to obtain and pay for such goods and services as are necessary for carrying out the work of the Club;
   (j) to open and operate such bank and other accounts as the Trustees consider necessary and to invest funds and to delegate the management of funds in the same manner and subject to the same conditions as the Trustees of a trust are permitted to do by the Trustee Act 2000;
   (k) to do all such other lawful things as are necessary for the achievement of the Objects.

(2) No alteration of these Rules or any special resolution shall have retrospective effect to invalidate any prior act of the Trustees, nor shall these Rules have retrospective effect or invalidate any act of the Trustees under previous Rules of the Club.

(3) Any meeting of Trustees at which a quorum is present at the time the relevant decision is made may exercise all the powers exercisable by the Trustees.

**17. Disqualification and Removal of Trustees**

A Trustee shall cease to hold office if he or she:

(1) is disqualified for acting as a Trustee by virtue of section 72 of the Charities Act 1993 (or any statutory re-enactment or modification of that provision);

(2) ceases to be a member of the Club;

(3) becomes incapable by reason of mental disorder, illness or injury of managing and administering his or her own affairs;

(4) resigns as a Trustee by notice to the Club (but only if at least two Trustees will remain in office when the notice of resignation is to take effect); or

(5) is absent without permission of the Trustees from all their meetings held within a period of six consecutive months and the Trustees resolve that his or her office be vacated.

**18. Proceedings of Trustees**

(1) The Trustees may regulate their proceedings as they think fit, subject to the provisions of these Rules.

(2) Any Trustee may call a meeting of the Trustees.

(3) The Honorary Secretary must call a meeting of the Trustees if requested to do so by a Trustee.

(4) Questions arising at a meeting must be decided by a majority of votes.

(5) In the case of an equality of votes, the person who chairs the meeting shall have a second or casting vote.

(6) No decision may be made by a meeting of the Trustees unless a quorum is present at the time that the decision is purported to be made.

(7) The quorum shall be four.
(8) A Trustee shall not be counted in the quorum present when any decision is made about a matter upon which that Trustee is not entitled to vote.
(9) If the number of Trustees is less than the number fixed as the quorum, the continuing Trustees or Trustee may act only for the purpose of filling vacancies or of calling a general meeting.
(10) The person elected as the Chair shall chair meetings of the Trustees.
(11) If the Chair is unwilling to preside or is not present within ten minutes after the time appointed for the meeting, the Vice-Chair shall chair the meeting. If the Vice-Chair is also unwilling to preside or is not present, the Trustees present may appoint one of their number to chair that meeting.
(12) The person appointed to chair the meetings of the Trustees shall have no function or powers except those conferred by this constitution or delegated to him or her in writing by the Trustees.
(13) A Trustee taking part in the meeting via telephone conference, Skype or other electronic means shall be deemed to be present at the meeting.
(14) In between Committee meetings, the Trustees may discuss matters by e-mail and, provided there is a consensus, valid and effectual decisions may be taken.

**19. Irregularities in Proceedings**

(1) Subject to sub-clause (2) of this clause, all acts done by a meeting of Trustees shall be valid notwithstanding the participation in any vote of a Trustee:
- who was disqualified from holding office;
- who had previously retired or who had been obliged by the constitution to vacate office;
- who was not entitled to vote on the matter, whether by reason of a conflict of interest or otherwise;
- if, without:
- the vote of that Trustee; and
- that Trustee being counted in the quorum,
- the decision has been made by a majority of the Trustees at a quorate meeting.

(2) Sub-clause (1) of this clause does not permit a Trustee to keep any benefit that may be conferred upon him or her by a resolution of the Trustees if the resolution would otherwise have been void.
(3) No resolution or act of
(a) the Trustees
(b) the Club in general meeting
shall be invalidated by reason of the failure to give notice to any Trustee or member or by reason of any procedural defect in the meeting unless it is shown that the failure or defect has materially prejudiced a member or the beneficiaries of the Club.

**20. Minutes**

The Trustees must keep minutes of all:
(1) appointments of Officers and Trustees made by the Trustees;
(2) proceedings at meetings of the Club;
(3) meetings of the Trustees including:
- the names of the Trustees present at the meeting;
- the decisions made at the meetings; and
- where appropriate the reasons for the decisions.

**21. Annual Report and Return and Accounts**

(1) The Trustees must comply with their obligations under the Charities Act 1993 with regard to:
(a) the keeping of accounting records for the Club;
(b) the preparation of annual statements of account for the Club;
(c) the transmission of the statements of account to the Commission;
(d) the preparation of an Annual Report and its transmission to the Commission;
(e) the preparation of an Annual Return and its transmission to the Commission.
(6) Accounts must be prepared in accordance with the provisions of any Statement of Recommended Practice issued by the Commission, unless the Trustees are required to prepare accounts in accordance with the provisions of such a Statement prepared by another body.

**22. Registered Particulars**

The Trustees must notify the Commission promptly of any changes to the Club's entry on the Central Register of Charities.

**23. Property**

(1) The Trustees must ensure the title to:
(a) all land held by or in trust for the Club that is not vested in the Official Custodian of Charities; and
(b) all investments held by or on behalf of the Club, is vested either in a corporation entitled to act as custodian Trustee or in no fewer than three individuals appointed by them as holding Trustees.

(2) The terms of the appointment of any holding Trustees must provide that they may act only in accordance with lawful directions of the Trustees and if they do so they will not be liable for the acts and defaults of the Trustees or of members of the Club.
(3) The Trustees may remove the holding Trustees at any time.

**24. Insurance**
The Trustees must insure suitably in respect of public liability.

**25. Notices**
(1) Any notice required by these Rules to be given to or by any person must be:
  (a) in writing; or
  (b) given using electronic communications.
(2) The Club may give any notice to a member either:
  (a) personally; or
  (b) by sending it by post in a prepaid envelope addressed to the member at his or her address; or
  (c) by leaving it at the address of the member; or
  (d) by giving it using electronic communications to the member's address.
(3) A member who does not register an address with the Club or who registers only a postal address that is not in the United Kingdom shall not be entitled to receive any notice from the Club.
(4) A member present in person at any meeting of the Club shall be deemed to have received notice of the meeting and of the purposes for which it was called.
(5) (a) Proof that an envelope containing a notice was properly addressed, prepaid and posted shall be conclusive evidence that the notice was given.
  (b) Proof that a notice contained in an electronic communication was sent in accordance with guidance issued by the Institute of Chartered Secretaries and Administrators shall be conclusive evidence that the notice was given.
  (c) A notice shall be deemed to be given 48 hours after the envelope containing it was posted or, in the case of an electronic communication, 48 hours after it was sent.

**26. Bye-laws**
(1) The Trustees may from time to time make bye-laws for the conduct of their business.
(2) The bye-laws may regulate the following matters but are not restricted to them:
  (a) the admission of members to the Club and the rights and privileges of such members, and the entrance fees, subscriptions and other fees or payments to be made by members;
  (b) the procedure at general meetings and meetings of the Trustees in so far as such procedure is not regulated by these Rules;
  (c) the keeping and authenticating of records. If the bye-laws made under this Rule permit records of the Club to be kept in electronic form and require a Trustee to sign the record, the bye-law must specify a method of recording the signature that enables it to be properly authenticated;
  (d) generally all such matters as are commonly the subject matter of the rules of an unincorporated association.
(3) The Club in general meeting has the power to alter, add to or repeal the bye-laws.
(4) The Trustees must adopt such means as they think sufficient to bring the bye-laws to the notice of members of the Club.
(5) The bye-laws shall be binding on all members of the Club. No bye-law shall be inconsistent with, or shall affect or repeal anything contained in, these Rules.

---

The following is the full text of the Bye-laws which the Club proposes to adopt.

**BYE-LAWS OF THE BRITISH ORNITHOLOGISTS' CLUB (Registered Charity No 279583) ('the Club')**

Adopted on the.....

**These Bye-laws are made under Rule 26 of the Club Rules and must be read in conjunction with those Rules.**

## PART 1

**Amendments**
1. Proposed changes to the Rules, or any part thereof, shall be set out in a resolution which shall be sent to all Members either by notice in the Bulletin or by separate mailing, together with details of the Agenda, at least three months before the date of the general meeting at which the resolution is to be decided.

## PART 2

**General Meetings**

2. The names of people nominated by the Trustees or Members of the Club under Rule 15(2) and (3) to be Officers and other Trustees shall be circulated to the membership at least 21 days before the relevant Annual General Meeting.
3. At the Annual General Meeting the business to be transacted shall comprise:
   (a) receiving and considering the Chairman's Review, the Trustees' Report and the Accounts for the preceding calendar year;
   (b) the regulation of matters having reference to the Bulletin;
   (c) the election of Officers and other Trustees;
   (d) any other business of which notice in writing shall have been given to the Honorary Secretary not less than 14 days before the meeting.
4. At a Special General Meeting no business may be transacted other than the business for which the meeting was called.

**Powers of Trustees**

(5) The Trustees may appoint additional sub-committees, ex-officio officers and members to advise on and administer specific activities of the Club. While these appointees may advise the Trustees, executive authority rests with the Trustees.
(6) The Trustees may appoint members (who may or may not be Trustees of the Club) to represent the Club on any Joint Committee set up in partnership with another Charity.
(7) The Trustees shall appoint an Editor of the Bulletin for a term not exceeding four years. The editor shall be eligible for re-appointment.
(8) The Trustees shall determine the annual subscription rate to be paid by members and review it annually.
(9) The Trustees shall determine the annual subscription to be paid by institutions and other organisations ('Institutional Subscribers') wishing to receive the Bulletin and review it annually.
(10) The annual subscriptions of Members and Institutional Subscribers shall be due for payment on 1 January in every year.
(11) When a member, who is not an Officer or other Trustee, has rendered or is rendering the Club any services, the Trustees may, if it is deemed appropriate, waive the subscription due from that member for any year or years.

**Proceedings of Trustees**

(12) The Editor of the Bulletin, Chairman and Members of any Sub-Committees of the Club and all ex-officio officers or members may attend meetings of the Trustees, by invitation of the Chairman or any of the Trustees, but without the right to vote on any issue.

**The Bulletin**

(13) The Club shall aim to publish a journal under the title of the 'Bulletin of the British Ornithologists' Club' four times a year.
(14) One copy shall be distributed gratis to every member and Institutional subscriber who has paid the appropriate current annual subscription.
(15) The Editor may receive an annual honorarium for such work, which shall be determined by the Trustees from time to time.
(16) The Editor may offer advice to the Trustees on all editorial matters but executive authority rests with the Trustees.
(17) No communication, the whole or any part of which has already been published elsewhere, shall be eligible for publication in the Bulletin, except at the discretion of the Editor.

**Complaints**

(18) A member wishing to complain of the manner in which affairs of the Club are conducted must communicate the complaint in writing to the Chairman or Honorary Secretary who will raise the complaint as soon as practicable at a meeting of the Trustees for a decision or, if the recipient of the complaint considers the matter of urgency, will call a meeting of the Trustees specially to consider it.
(19) The decision of the Trustees shall be communicated to the Member by the Honorary Secretary within 21 days of the relevant meeting.

## SPECIAL GENERAL MEETING

A Special General Meeting of the British Ornithologists' Club will be held in Room SALC3, Sherfield Building, Imperial College, London SW7 2AZ at 5.40pm on Tuesday 12 June 2012.

AGENDA

1. Special resolution to propose the adoption of the new Rules for the Club in accordance with the draft special resolution attached.
2. Subject to the adoption of the new Rules the adoption of the Bye-Laws made under Rule 26 of the new Rules.

No other business will be conducted at this meeting.

---

**British Ornithologists Club Charity Number 279583 ('the Club')**

## SPECIAL RESOLUTION

In accordance with Rule 40 of the Rules of the Club which were approved by the Special General Meeting of the Club on 31 October 2000 the Committee of the Club having published the proposed changes to the Rules of the Club in the Bulletin together with the details of the agenda for the Special General Meeting at least three months prior to today's date and the Committee being satisfied that the proposed changes to the Rules would not have the effect of making the Club cease to be a charity at law

**IT WAS RESOLVED** by the members at the Special General Meeting held on today's date as follows:

1. That the Rules of the Club be amended and adopted in accordance with the draft annexed hereto pursuant to Rule 40 of current Rules of the Club and the new rules shall operate until further amendment.
2. That the Committee shall forthwith notify the Charity Commission of the changes in accordance with the current procedure set down by the Charity Commission.

Dated the .....day of .....2012

.....
Honorary Secretary

---

Members who wish to vote for or against the adoption of the new Rules and Bye-laws, but who will be unable to attend the SGM, may vote by post or by e-mail. Letters or e-mails must reach the Honorary Secretary (contact details on the inside of the back cover) no later than 9 June 2012. Please address any queries on the proposed Rules or Bye-laws to the Chairman (see contact details on the inside front cover).

---

The 967th meeting of the Club was held on Tuesday 11 October 2011 in the Sherfield Building, Imperial College, South Kensington, London SW7 2AZ. Fifteen members and 11 non-members were present.

Members attending were: Miss H. BAKER (*Chairman*), Cdr. M. B. CASEMENT, RN, D. J. FISHER, F. M. GAUNTLETT, A. GIBBS, Revd. T. W. GLADWIN, K. HERON JONES, Dr J. P. HUME, R. R. LANGLEY, D. J. MONTIER, R. C. PRICE, Dr R. P. PRŶS-JONES, P. RUDGE, S. A. H. STATHAM and C. W. R. STOREY.

Guests attending were: Ms R. BRISTOL (*Speaker*), Ms M. DAVIES, Ms K. DUKE, Mrs M. H. GAUNTLETT, Mrs J. GLADWIN, Mrs J. HERON JONES, Mrs A. J. McDONALD, Mrs M. MONTIER, T. TROMBONE, Dr J. VERHELST and Ms S. WALSH.

Rachel Bristol spoke on the subject of *Back from the brink: translocation of threatened endemic birds in the Seychelles*. The main threats to Seychelles endemic birds are habitat loss and introduced predators, particularly cats and rats, which have occurred since human colonisation of the Seychelles began in the 1770s. The majority of the original forest cover was rapidly removed for plantation agriculture, predominantly coconuts in coastal plateau areas and cinnamon in the mountains, and rats and cats quickly spread to most islands. As a result, several species became extinct, including Seychelles Parakeet *Psittacula wardi* and Seychelles Chestnut-flanked White-eye *Zosterops semiflavus*, while others came perilously close. Seychelles Magpie-Robin *Copsychus sechellarum* was originally resident on most, if not all, the granitic islands, but was lost from all except Frégate (219 ha), where a tiny population of 11–30 individuals clung on for *c.*40 years until a recovery programme was instigated in 1990. Seychelles Warbler *Acrocephalus sechellensis* was reduced to a tiny population of 28–30 individuals on Cousin (26 ha) and Seychelles Paradise Flycatcher *Terpsiphone corvina* became extinct on all islands except La Digue.

To increase the numbers, range and survival prospects of five of the eight Seychelles threatened endemic birds, translocations (reintroductions and conservation introductions) have been used in tandem with habitat rehabilitation to create additional island populations of these birds. Due largely to translocations, we now have over 200 Seychelles Magpie-Robins on five islands, >3,000 Seychelles Warblers on four islands, Seychelles White-eyes *Zosterops modestus* on five islands, Seychelles Fodies *Foudia sechellarum* on five islands and Seychelles Paradise Flycatchers now have a second population on Denis. After some initial translocation failures in the 1970s and 80s, translocation methods have been continually refined and Seychelles now achieves consistent translocation success. Keys to success have been: ensuring all of the species' habitat requirements are provided in the new environment (for example, habitat rehabilitation prior to release, predator management, provision of nest boxes and supplementary food), translocating only wild birds and tailoring the release methods to the species. In addition, intensive post-release monitoring is always undertaken to monitor survival and breeding of the released individuals, and also to detect any problems so that mitigation actions can be undertaken if necessary.

---

## REFEREES

I am grateful to the following, who have reviewed manuscripts submitted to the Bulletin during the last year (those who refereed more than one manuscript are denoted by an asterisk in parentheses): Bud Anderson, John Bates, Bruce Beehler (*), Chris Bradshaw, Murray Bruce, Donald Buden, Peter Castell, Jaime Chaves, Santiago Claramunt, Andrea Corso, Kevin Clark, William S. Clark, Martin Collinson (*), Sidnei M. Dantas, Richard Dean, Ron Demey (*), Edward C. Dickinson (*), Robert J. Dowsett (*), Françoise Dowsett-Lemaire, Guy Dutson, Chris Feare, Clemency T. Fisher, Juan F. Freile, Errol Fuller, Harold Greeney (*), Paul Greenfield, Steven M. S. Gregory (*), Paul Isenmann, Morton L. Isler, Niels Krabbe, Daniel F. Lane, Mary LeCroy (*), Jeremy Lindsell (*), Huw Lloyd, Michel Louette, Urban Olsson, Byron Palacios, David Parkin, José Fernando Pacheco (*), Marcos Persio, Alan Peterson, Robert Prŷs-Jones (*), Hugo Rainey, Van Remsen, Frank Rheindt, Eleanor Rowley, Roger Safford, Paul Salaman, Richard Schodde (*), Thomas S. Schulenberg, Sergio Seipke, Weber Silva, Adrian Skerrett, Frank Steinheimer (*), Lars Svensson (*), David R. Wells, Clayton White, Gary Wiles, and Kevin J. Zimmer.—The Hon. Editor

# New sites and range extensions for endemic and endangered birds in extreme north-east Brazil

*by Marcelo da Silva, Bruno Rodrigo de Albuquerque França, Luiz Yoshihiro Garcia de Lima Hagi, Miguel Rocha Neto, Damião Valdenor de Oliveira & Mauro Pichorim*

*Received 16 March 2010; final revision accepted 29 September 2011*

Summary.—Between 1998 and 2011 we surveyed diverse localities within the Atlantic Forest and Caatinga biomes in the north-east Brazilian state of Rio Grande do Norte, registering the presence of Ochraceous Piculet *Picumnus limae*, Silvery-cheeked Antshrike *Sakesphorus cristatus* and Yellow-faced Siskin *Sporagra yarrellii*, none of which had definitely been recorded previously in the state. We also present new records of Tawny Piculet *Picumnus fulvescens*, expanding our knowledge of the species' distribution.

In north-east Brazil, the state of Rio Grande do Norte is one of the least visited by naturalists and museum expeditions (Olmos 2003, Pacheco 2004). Information on its avifauna is limited to the historical records of Marcgrave (1942), several recent inventories (e.g., Nascimento 2000, Larrazábal *et al.* 2002, Olmos 2003, Azevedo Júnior *et al.* 2004) and the contributions of Sick (1991), Teixeira *et al.* (1993), Praxedes *et al.* (1997), Varela-Freire (1997), Varela-Freire & Araújo (1997), Medeiros *et al.* (2000), Whitney *et al.* (2000) and Silveira *et al.* (2003). Despite our lack of knowledge of the state's avifauna, some areas within the Atlantic Forest, Caatinga and littoral are considered priorities for biodiversity conservation (Conservation International 2000, Larrazábal *et al.* 2002, MMA 2002, Bencke & Maurício 2006). Here we present new data on species considered to be rare, threatened or endemic.

**TAWNY PICULET** *Picumnus fulvescens*

Considered Near Threatened (BirdLife International 2011b), *P. fulvescens* is confined to north-east Brazil (Sick 1997), where it is widespread from eastern Piauí and southern Ceará to Paraíba, Pernambuco, Alagoas and Sergipe (BirdLife International 2011b, Ruiz-Esparza *et al.* 2011). It was first recorded in Rio Grande do Norte at Seridó Ecological Station, in the Serra Negra do Norte (Nascimento 2000). We found this piculet to be widespread in the Atlantic Forest of Rio Grande do Norte and the south-central caatinga belt (Fig. 1, Table 1). On the east coast it occurs from Baía Formosa and Canguaretama, in the far south of the state, north to Parnamirim and Natal (Fig. 1), and we have also observed the species in deciduous forest at the ecotone between Atlantic Forest and caatinga. *P. fulvescens* is rather catholic in its habitat requirements, being found in caatinga, deciduous forest, semi-deciduous forest, and coastal savanna and scrub (Table 1). It is also found in small forest fragments and in regenerating areas, including at forest borders.

**OCHRACEOUS PICULET** *Picumnus limae*

Endemic to north-east Brazil and considered threatened (MMA 2003). In Ceará, until recently it was known only from the uplands of Maranguape, Aratanha and Baturité, but the species has since been found across almost the entire state (Girão *et al.* 2007). It also occurs in forest islands (known locally as *brejos de altitude*) on the slopes of residual plateaux

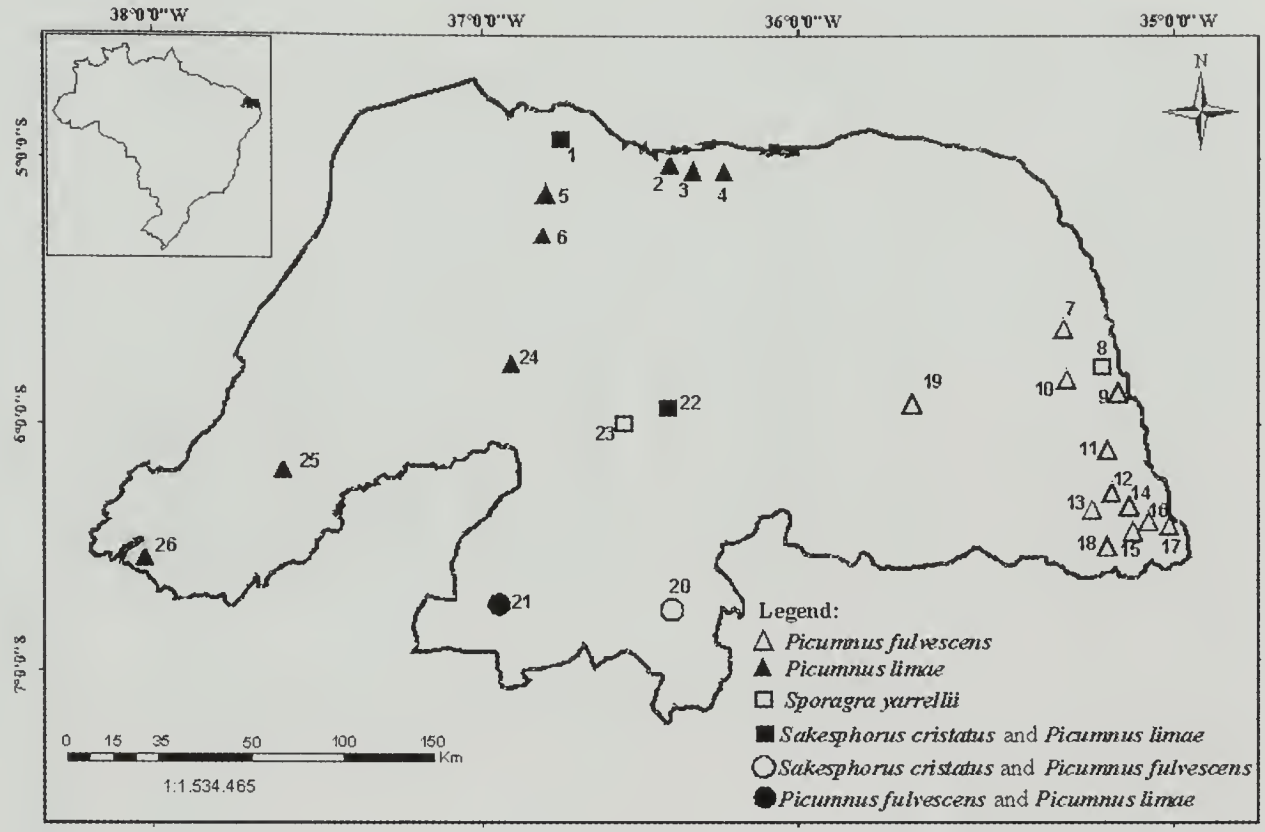


Figure 1. Locations of records of endemic and / or endangered birds in the state of Rio Grande do Norte. 1. Dunas do Rosado, Porto do Mangue, 2. Soledade, Macau, 3. Ponta do Tubarão Sustainable Development Reserve, Macau, 4. Petrochemical Petrobras, Guamaré, 5. Lagoa Queimado, Pendências, 6. Petrochemical plant, Alto do Rodrigues, 7. Landfill, Ceará Mirim, 8. UFRN campus, Natal, 9. Empresa de Pesquisa Agropecuária do Rio Grande do Norte (EMPARN), Parnamirim, 10. Olho D'água, Macaíba, 11. Golani, Nízia Floresta, 12. Fazenda Bom Jardim, Goianinha, 13. Mata Paraíba, Canguaretama, 14. Vale do Catu, Canguaretama, 15. Mata Bela, Baía Formosa, 16. Mata Dançarino, Baía Formosa, 17. Mata Estrela RPPN, Baía Formosa, 18. Piquiri Una APA, Espírito Santo, 19. Serra do Formigueiro, Barcelona, 20. Fazenda Malhada Vermelha, Parelhas, 21. Seridó Ecological Station, Serra Negra do Norte, 22. Pimenteira, Serra de Santana, Santana do Matos, 23. BR 226, Florânia, 24. Oiteiro, Campo Grande, 25. Mata Sr. Clezinho, Martins, 26. Serra de São José, Luís Gomes.

in the caatinga of Pernambuco (Roda 2002). Varela-Freire & Araújo (1997) mentioned, without details, the presence of *P. limae* in the interior of Rio Grande do Norte, around Seridó. We observed this species in the south-centre, far west and along the north coast of the state (Fig. 1, Table 1), mainly in areas of caatinga, except in the west, where it was found in forest islands atop mountains (Table 1). Our surveys found *P. limae* and *P. fulvescens* syntopically only at Seridó Ecological Station, in the Serra Negra do Norte. However, in southern Ceará, Olmos *et al.* (2005) found individuals of *P. limae* resembling *P. fulvescens*, suggesting they could be conspecific. *P. limae* generally occurs in secondary forest and near areas destroyed by monocultures, especially in the Serra do Martins, where the natural vegetation has been mainly replaced by cashew *Anacardium occidentale* plantations, and the Serra Santana do Matos. In the north of the state *P. limae* has been recorded in fragmented caatingas, primarily modified by oil drilling, farming and urban growth, further confirming that the species can adapt to habitat change.

**SILVERY-CHEEKED ANTSHRIKE** *Sakesphorus cristatus*

Found from Piauí to Ceará, Paraíba, Pernambuco, and from Bahia to central Minas Gerais (Zimmer & Isler 2003, Marini & Lopes 2005). We recorded *S. cristatus* in caatinga in the

TABLE 1

Locations, habitat and documentation (if any) for Tawny Piculet *Picumnus fulvescens*, Ochraceous Piculet *P. limae*, Silvery-cheeked Antshrike *Sakesphorus cristatus* and Yellow-faced Siskin *Sporagra yarrellii* records in Rio Grande do Norte. Habitats: SF (semi-deciduous forest), DF (deciduous forest), CA (Caatinga), TB (*tabuleiro* = coastal cerrado) and AA (human-modified habitat). Observer: 1 = Marcelo da Silva, 2 = Bruno Rodrigo de Albuquerque França, 3 = Luiz Yoshihiro Garcia de Lima Hagi, 4 = Miguel Rocha Neto, 5 = Jorge B. Irusta, 6 = Francisco Sagot Martins, 7 = Damião Valdenor de Oliveira, 8 = Mauro Pichorim. Where stated, photographs and sound-recordings have been deposited on WikiAves (www.wikiaves.com.br).

| Location | Coordinates and altitude | Date | Number of individuals | Habitat | Documentation | Observer |
|---|---|---|---|---|---|---|
| *Picumnus fulvescens* | | | | | | |
| Landfill, Ceará Mirim | 05°42′52″S, 35°22′59″W; 66 m | June–September 2005 | Pair with nest | SF | Photograph | 5 |
| | | 4 August 2007 | Pair | SF | Photograph | 1,2,5 |
| | | 14 July 2011 | Pair | SF | Photographs (WA394419, WA394421) | |
| Empresa de Pesquisa Agropecuária do Rio Grande do Norte (EMPARN) | 05°55′45″S, 35°11′21″W; 39 m | 14 October 06 | 1♂ | SF | Sight and aural record | 1 |
| Olho D'água, Macaíba | 05°53′21″S, 35°23′07″W; 56 m | 5 April 2007 | 2♂ and 2♀ | DF | Sound-recording and photograph | 1,2,3 |
| | | 11 September 2008 | 1♂ | DF | Photograph (WA235426) | 1 |
| Golani, Nízia Floresta | 06°07′44″S, 35°13′40″W; 90 m | 25 February 2006 | 1♂ and 2♀ | SF | Sight and aural record | 1 |
| Fazenda Bom Jardim, Goianinha | 06°18′25″S, 35°14′03″W; 90 m | 27 June 2006 | One | SF | Aural record | 1 |
| Mata Paraíba, Canguaretama | 06°26′47″S, 35°07′26″W; 71 m | 13 April 2006 | One | SF | Aural record | 1 |
| Vale do Catu, Canguaretama | 06°23′17″ S, 35°09′25″W; 30 m | 12–13 December 2005 | Two | SF | Sight and aural record | 6 |
| Mata Bela, Baía Formosa | 06°22′25″S, 35°01′24″W; 64 m | 14 April 2006 | One | SF | Aural record | 1 |
| | | 25 March 2007 | One | SF | Sight-only record | 1,4 |
| Mata do Dançarino, Baía Formosa | 06°24′51″S, 35°04′40″W; 35 m | 6 October 2007 | Pair | SF | Sight and aural record | 1 |

| Location | Coordinates and altitude | Date | Number of individuals | Habitat | Documentation | Observer |
|---|---|---|---|---|---|---|
| Mata Estrela RPPN, Baía Formosa | 06°22′30″S, 35°01′21″W; 47 m | 30 November 2008 | 1♂ | SF | Sound-recording | 1 |
| Piquiri Una APA, Espírito Santo | 06°22′30″S, 35°17′17″W; 44 m | 2 December 2006 | Two pairs | SF, TB | Sound-recording | 1 |
| | | 17 December 2006 | Pair | SF | Sight and aural record | 1 |
| | | 29 May 2011 | 1♂ | SF | Photograph (WA361275) | 2 |
| Serra do Formigueiro, Barcelona | 06°00′17″S, 35°55′33″W; 230 m | 2 March 2006 | 1♂ | CA | Sight-only record | 5 |
| Fazenda Malhada Vermelha, Parelhas | 06°44′54″ S, 36°40′29″ W; 368 m | 9 June 2006 | Two | CA | Photograph | 6 |
| Seridó Ecological Station, Serra Negra do Norte | 06°34′51″S, 37°15′05″W; 200 m | 10 March 2007 | One | CA | Sight and aural record | 8 |
| *Picumnus limae* | | | | | | |
| Dunas do Rosado, Porto do Mangue | 04°59′42″S, 036°52′46″W; 102 m | 29 April 2007 | 2♂ and 2♀ | CA | Sound-recording | 1,2 |
| Soledade, Macau | 05°05′36″S, 36°30′22″W; 14 m | 16 July 2005 | 1♀ | CA | Photograph | 5 |
| | | 5 January 2010 | | | Photograph (WA186314) | 1 |
| Ponta do Tubarão Sustainable Development Reserve, Macau | 05°06′28″S, 36°27′49″W; 20 m | 11 June 2006 | 1♀ | CA | Sight and aural record | 1,2 |
| | | 24 June 2006 | 1♂ | CA | Sight and aural record | 1,2 |
| | | 2–3 July 2011 | 2♂ | CA | Photographs (WA385412, WA385420) | 1,2 |
| Petrochemical Petrobras, Guamaré | 05°08′44″S, 36°22′53″W; 13 m | 13–15 February 2009 | Several pairs | CA | Sound-recording | 1,2 |
| | | 3 January 2009 | 1♂, 1♀ | CA | Sound-recording (WA253695) | 1 |
| | | 14–18 May 2010 | 2♂, 2♀ | CA | Photographs (WA143935, WA235424, WA316993) | 1,2 |
| Lagoa Queimado, Pendências | 05°15′37″S, 36°40′35″W; 10 m | 7 June 2006 | 1♀ | CA | Photograph | 5 |

| Location | Coordinates and altitude | Date | Number of individuals | Habitat | Documentation | Observer |
|---|---|---|---|---|---|---|
| Petrochemical plant, Alto do Rodrigues | 05°19′04″S, 36°41′48″W; 14 m | November–December 2006 | 1♂, 1♀ | CA | Photograph | 5 |
| Serido Ecological Station, Serra Negra do Norte | 06°34′51″S, 37°15′05″W; 200 m | 29 November 2002, 5 December 2002 and 20 June 2011 | Several pairs | CA | Sight-only records | 6,8 |
| Sítio Pimenteira, Serra de Santana, Santana do Matos | 06°03′31″S, 36°43′32″W; 700 m | 31 January 2009 | One pair and 1♀ | CA | Sight-only record | 6 |
| Oiteiro, Campo Grande | 05°47′57″S, 37°25′49″W; 165 m | 17–18 January 2009 | Several pairs | CA | Sight-only record | 1 |
| Mata Sr. Clezinho, Martins | 06°03′52″S, 37°56′14″W; 679 m | 18 March 2006 | Two pairs | SF | Sight and aural record | 1 |
| Serra de São José, Luís Gomes | 06°19′41″S, 38°25′17″W; 335 m | 4 June 2006 | One | SF | Aural record | 1,2,4 |
| *Sakesphorus cristatus* | | | | | | |
| Dunas do Rosado, Porto do Mangue | 04°59′42″S, 36°52′46″W; 102 m | 29 December 2006 | 2♂ | CA | Sound-recording | 1,2 |
| | | 18 January 2007 | 2♂ and 2♀ | CA | Photographs and specimens deposited in the ornithological collection of UFRN (COUFRN) | 1,2,3 |
| Fazenda Malhada Vermelha, Parelhas | 06°44′54″S, 36°40′29″W; 368 m | 14 November 2005<br>11 June 2006<br>9–11 March 2007<br>28–29 August 2007 | Pair<br>Two<br>Two<br>Pair | CA | Sound-recording and photograph | 6 |
| Pimenteira, Serra de Santana, Santana do Matos | 06°03′31″S, 36°43′32″W; 700 m | 29 January–1 February 2009 | 1♂, 1♀ and a pair | CA | Sight-only record | 6,7 |
| *Sporagra yarrellii* | | | | | | |
| UFRN campus, Natal | 05°50′29″S, 35°1′09″W; 48 m | June 1998 | One | AA | Sight-only record | 5 |
| BR 226, Florânia | 06°05′11″S, 36°56′07″W; 136 m | 3 June 2006 | 1♀ | CA | Sound-recording and photograph (WA295444) | 1, 2,4 |

hinterland at altitudes of 360–700 m and on the north coast at *c.*100 m. Although expected to occur in Rio Grande do Norte, ours are the first documented records in the state (Table 1).

**YELLOW-FACED SISKIN** *Sporagra yarrellii*

A globally threatened species endemic to north-east Brazil, where it occurs from Piauí to Ceará and in Paraíba to Bahia (MMA 2003, BirdLife International 2011a). In Rio Grande do Norte there is only one undocumented record from Serra Verde, Taipu (Praxedes *et al.* 1997). We photographed a female in a patch of caatinga beside highway BR 226, in the municipality of Florânia (Fig. 1, Table 1). In addition, J. B. Irusta (pers. comm.) observed a probable escapee on the campus of the Federal University of Rio Grande do Norte, in Natal. This species is sold illegally in several markets around Natal, but these birds may be trapped in neighbouring states as their dealers state that they originate in Paraíba and Pernambuco. During 2006–08 wildlife officers confiscated three, five and single individuals, respectively, which were later released in caatingas at Pureza, Tangará, Currais Novos, Campo Redondo and Santa Cruz, all in Rio Grande do Norte (A. P. Leite pers. comm.). In the Serra de Santana, Santana do Matos, some local people claim that *S. yarrellii* appears in upland areas (*c.*700 m) in March (suggesting migration) when they are illegally captured. The trade in this endangered bird in Rio Grande do Norte and in other north-eastern states is concerning (Pereira & Brito 2005, Rocha *et al.* 2006), with the relative lack of recent records suggesting a steady decline and that legal measures to prevent the species' capture and sale require enforcement.

Our data on *P. limae* and *S. yarrellii* are important for establishing regional conservation priorities. The caatinga, montane forest islands and coastal forest fragments are being steadily destroyed and fragmented (SNE 2002, Fundação SOS Mata Atlântica 2009). The presence of threatened species should influence the selection of future conservation units. Seridó Ecological Station (1,128 ha) is the only fully protected area in the state, meaning that the protected area network is in urgent need of expansion. The montane forest islands of Luis Gomes are a priority as they are important for the conservation of *P. limae* and other species, with large remnants still biologically unexplored. Also relevant is the need for population surveys of several poorly known species and the exploration of other ecosystems found in the state.

**Acknowledgements**

The Instituto de Desenvolvimento Sustentável e Meio Ambiente do Rio Grande do Norte (IDEMA) permitted access to conservation units and provided logistical support. The Estivas plant and Baía Formosa distillery granted access to their properties. We thank our referees, Andrew Whittaker and Fábio Olmos, for their valued input. Jorge B. Irusta and Francisco Sagot Martins provided unpublished data.

References:

Azevedo Junior, S. M., Larrazábal, M. E. & Pena, O. 2004. Aves aquáticas de ambientes antrópicos (Salinas) do Rio Grande do Norte, Brasil. Pp. 255–266 *in* Branco, J. O. (ed.) *Aves marinhas e insulares brasileiras: bioecologia e conservação.* Ed. Univale, Itajaí.

Bencke, G. A. & Maurício, G. N. 2006. Áreas importantes para a conservação das aves nos estados do domínio da Mata Atlântica: síntese dos resultados. Pp. 91–99 *in* Bencke, G. A., Maurício, G. N., Develey, P. F. & Goerck, J. M. (eds.) *Áreas importantes para a conservação das aves no Brasil. Parte I - estados do domínio da Mata Atlântica.* SAVE Brasil, São Paulo.

BirdLife International. 2011a. Species factsheet: *Carduelis yarrellii.* www.birdlife.org (accessed 10 March 2011).

BirdLife International. 2011b. Species factsheet: *Picumnus fulvescens.* www.birdlife.org (accessed 10 March 2011).

Conservation International do Brasil. 2000. *Avaliação e ações prioritárias para a conservação da biodiversidade da Mata Atlântica e Campos Sulinos.* Ministério do Meio Ambiente, Brasília.

Fundação SOS Mata Atlântica. 2009. *Atlas da evolução dos remanescentes florestais e ecossistemas associados do domínio da Mata Atlântica no período 2005–2008*. Instituto de Pesquisas Espaciais, São Paulo.

Girão, W., Albano, C., Pinto, P. T. & Silveira, L. F. 2007. Avifauna da Serra de Baturité, Ceará: dos naturalistas à atualidade. Pp. 187–224 *in* Oliveira, T. S. & Araújo, F. S. (eds.) *Diversidade e conservação da biota da Serra de Baturité, Ceará*. Ed. UFC, COELCE, Fortaleza.

Larrazábal, M. E., Azevedo Junior, S. M. & Pena, O. 2002. Monitoramento de aves limícolas na Salina Diamante Branco, Galinhos, Rio Grande do Norte, Brasil. *Rev. Bras. Zool.* 19: 1081–1089.

Marcgrave, J. 1942. [Marcgrave, G. 1648]. *História natural do Brasil*. Imprensa Oficial do Estado, São Paulo.

Marini, M. A. & Lopes, L. E. 2005. Novo limite sul na distribuição geográfica de *Sakesphorus cristatus* (Thamnophilidae). *Ararajuba* 13: 105–106.

Medeiros, J. A., Silveira, A. G. & Varela-Freire, A. A. 2000. Zoogeografia do Rio Grande do Norte VI: listagem provisória das aves do açude Riacho do Roçado, São José do Seridó, RN. *Sociedade e Território* 14: 29–34.

MMA (Ministério do Meio Ambiente). 2002. *Avaliação e ações prioritárias para a conservação da biodiversidade da caatinga*. MMA / SBF, Brasília.

MMA (Ministério do Meio Ambiente). 2003. *Lista das espécies da fauna brasileira ameaçadas de extinção*. Instrução Normativa n° 3, 27 de maio de 2003. Diário Oficial da República Federativa do Brasil, Brasília.

Nascimento, J. L. X. 2000. Estudo comparativo da avifauna em duas Estações Ecológicas da Caatinga: Aiuaba e Seridó. *Melopsittacus* 3: 12–35.

Olmos, F. 2003. Birds of Mata Estrela private reserve, Rio Grande do Norte. *Cotinga* 20: 26–30.

Olmos, F., Silva, W. A. G. & Albano, C. 2005. Levantamentos rápidos de aves na Caatinga do sul do Ceará e oeste de Pernambuco, nordeste do Brasil. *Pap. Avuls. Zool. S. Paulo* 45: 179–199.

Pacheco, J. F. 2004. As aves da Caatinga: uma análise histórica do conhecimento. Pp. 189–250 *in* Silva, J. M. C., Tabarelli, M., Fonseca, M. T. & Lins, L. V. (eds.) *Biodiversidade da Caatinga: áreas e ações prioritárias para a conservação*. Ministério do Meio Ambiente & Universidade Federal de Pernambuco, Brasília.

Pereira, G. A. & Brito, M. T. 2005. Diversidade de aves silvestres brasileiras comercializadas nas feiras livres da Região Metropolitana do Recife, Pernambuco. *Atualidades Orn.* 126: 14.

Praxedes, G. C., Araújo, M. F. F. & Varela-Freire, A. A. 1997. Zoogeografia do Rio Grande do Norte II. Levantamento preliminar da ornitofauna da micro-região da Serra Verde (Taipu, RN). *Caderno Norte-Rio-Grandense de Temas Geográficos* 11: 82–89.

Rocha, M. S. P., Cavalcanti, P. C. M., Sousa, R. L. & Alves, R. R. N. 2006. Aspectos da comercialização ilegal de aves nas feiras livres de Campina Grande, Paraíba, Brasil. *Rev. Biol. Ciênc. Terra* 6: 204–221.

Roda, S. A. 2002. Aves endêmicas e ameaçadas de extinção no Estado de Pernambuco. Pp. 537–556 *in* Tabarelli, M. & Silva, J. M. C. (eds.) *Diagnóstico da biodiversidade de Pernambuco*. Secretaria da Ciência, Tecnologia e Meio Ambiente & Ed. Massangana, Recife.

Ruiz-Esparza, J., Rocha, P. A., Souza Ribeiro, A., Ferrari, S. P. & Araujo, H. F. P. 2011. Expansion of the known range of Tawny Piculet *Picumnus fulvescens* including the south bank of the Sao Francisco River in north-east Brazil. *Bull. Brit. Orn. Cl.* 131: 217–221.

Sick, H. 1991. Distribution and subspeciation of the Biscutate Swift *Streptoprocne biscutata*. *Bull. Brit. Orn. Cl.* 111: 38–40.

Sick, H. 1997. *Ornitologia brasileira*. Ed. Nova Fronteira, Rio de Janeiro.

Silveira, L. F., Olmos, F., Roda, S. A. & Long, A. 2003. Notes on the Seven-coloured Tanager *Tangara fastuosa* in north-east Brazil. *Cotinga* 20: 82–88.

SNE (Sociedade Nordestina de Ecologia). 2002. *Mapeamento da Mata Atlântica, seus ecossistemas associados: Paraíba e Rio Grande do Norte*. Relatório técnico. SNE, Recife.

Teixeira, D. M., Otoch, R., Luigi, G., Raposo, M. A. & Almeida, A. C. C. 1993. Notes on some birds from northeastern Brazil. *Bull. Brit. Orn. Cl.* 113: 48–52.

Varela-Freire, A. A. 1997. *Fauna Potiguar*. Ed. Univ. Federal do Rio Grande do Norte, Natal.

Varela-Freire, A. A. & Araújo, S. A. 1997. Zoogeografia do Rio Grande do Norte I: a ornitofauna do Seridó Potiguar. *Caderno Norte-Rio-Grandense de Temas Geográficos* 11: 52–81.

Whitney, B. M., Pacheco, J. F., Buzzetti, D. R. & Parrini, R. 2000. Systematic revision and biogeography of the *Herpsilochmus pileatus* complex, with description of a new species from northeastern Brazil. *Auk* 177: 869–891.

Zimmer, K. J. & Isler, M. L. 2003. Family Thamnophilidae (typical antbirds). Pp. 448–681 *in* del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 8. Lynx Edicions, Barcelona.

*Addresses*: Marcelo da Silva, Bruno Rodrigo de Albuquerque França, Luiz Yoshihiro Garcia de Lima Hagi & Miguel Rocha Neto, Laboratory of Zoology, Dept. of Biological Sciences and Health, Universidade Potiguar (UnP), Av. Senador Salgado Filho, 1610, Natal, RN, Brazil, e-mail: marcelzoobio@yahoo.com.br. Mauro Pichorim & Damião Valdenor de Oliveira, Dept. of Botany, Ecology and Zoology, Center of Biosciences, Universidade Federal do Rio Grande do Norte, CEP 59072-970, Natal, Brazil.

© British Ornithologists' Club 2011

# Interesting distributional records of Amazonian birds from Pastaza, Ecuador

*by Galo Buitrón-Jurado*

*Received 15 February 2011*

Summary.—Records of 28 species that extend our knowledge of their status and distribution in the eastern lowlands of Ecuador are presented, among them the fourth record of Pale-eyed Blackbird *Agelasticus xanthophthalmus* in the country, only the ninth Ecuadorian locality for Grey-bellied Hawk *Accipiter poliogaster*, and the first record for prov. Pastaza of Long-billed Starthroat *Heliomaster longirostris*. Many of the other species reported on here might prove to be comparatively widely distributed in Ecuador's Amazonian lowlands, but to date relatively little field work has been conducted in this region away from the main Napo drainage.

Knowledge of bird distribution in Ecuador has increased apace in recent years. New distributional records have been obtained at many sites, especially in previously poorly known areas of the country such as the Central Andes (Henry 2005), but also the western and eastern slopes (Freile & Chaves 2004, Henry 2005, Cisneros-Heredia 2006, Guevara *et al.* 2008). Even well-watched areas in the vicinity of Quito have provided interesting new records (Buitrón & Freile 2006, Vogt 2007).

Nevertheless, much work remains to fully elucidate the distribution of Ecuadorian birds, especially in parts of the country yet to be intensively explored. One such area is central Amazonian Ecuador (i.e. between the ríos Napo and Pastaza), despite that early ornithological workers made important collections at sites such as Canelos, Sarayacu and the río Bobonaza (Chapman 1926). Furthermore, although an impressive amount of ornithological research has been undertaken in Ecuadorian Amazonia since 1970, most research has been conducted in the north-east of this region, at relatively accessible sites in Cuyabeno and Limoncocha reserves and, more recently, at Yasuní National Park and at the many new lodges along the upper Napo, e.g. La Selva and Yuturi (Tallman & Tallman 1978, Canaday 1997, Canaday & Ribadeneyra 2001, Blake 2007). On the other hand, away from the upper Napo, the only site in Amazonian Ecuador from where many recent observations are available is Kapawi on the border with Peru and on the lower río Pastaza (Alvarez-Alonso & Whitney 2003).

Due to the patchy nature of ornithological collecting and probably also because early collectors lacked tape-recorders, many Amazonian species in eastern Ecuador are known from just a few scattered localities. Here I provide new distributional data for 28 species obtained from the region of the río Villano, prov. Pastaza, Ecuador.

## Study area and Methods

Records were obtained in February–December 2008, at eight locations along the río Villano, prov. Pastaza, Ecuador (Fig. 1). Climate is wet with an estimated annual precipitation of >3,000 mm according to data from the nearest meteorological station at Puyo, prov. Pastaza (INAMHI 2006). The study area has a more hilly terrain than north-east Amazonian Ecuador and the region is characterised by vast tracts of lowland tropical forest with many small indigenous communities and scattered oil wells. An oil pipeline runs parallel to the río Villano, and a road linking the main indigenous communities west

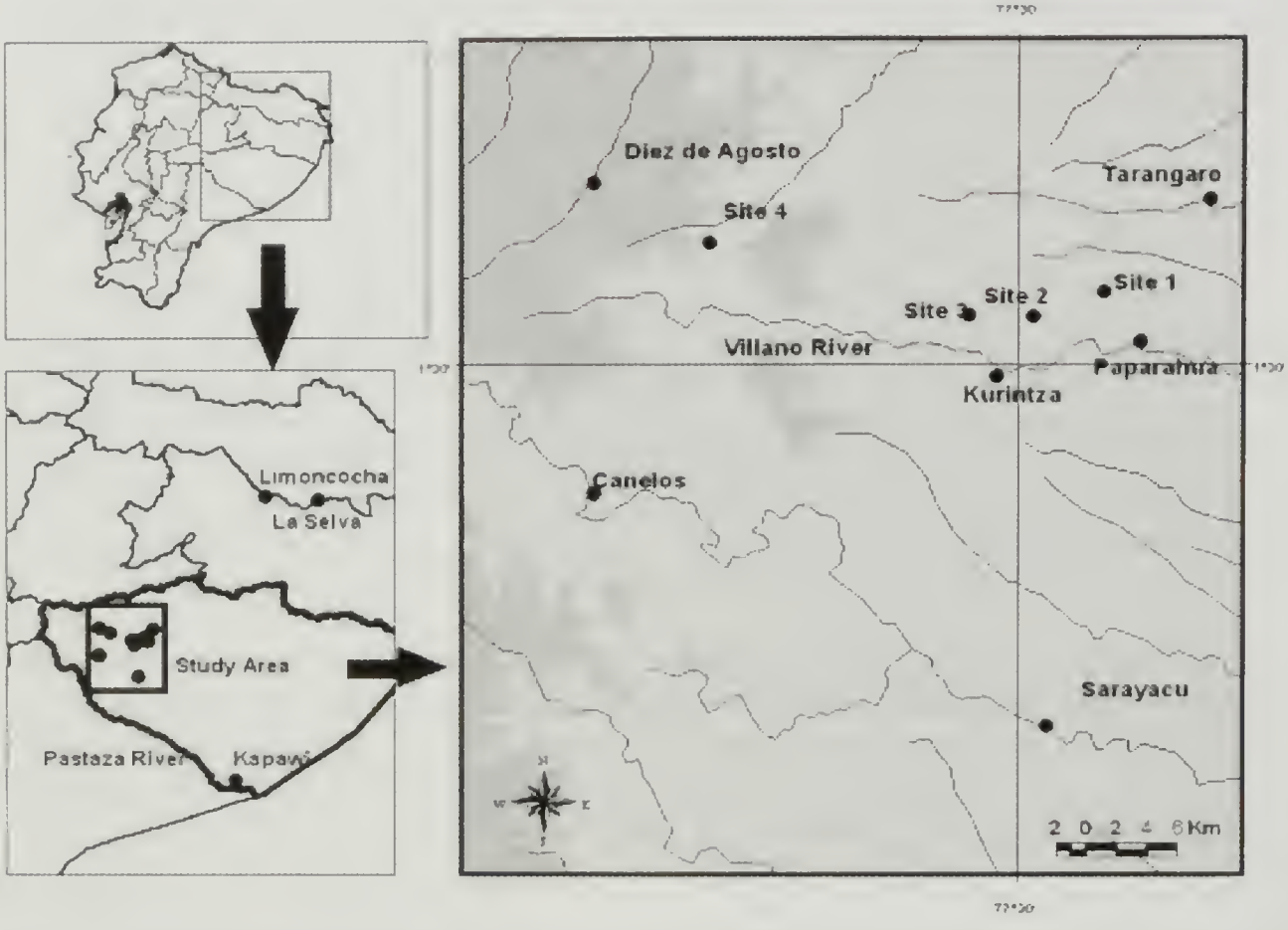


Figure 1. Map of mainland Ecuador, and the study area in Pastaza province including locations mentioned in the text.

to Puyo is under construction. As part of a biodiversity assessment of the region, the eight sampling sites were accessed via helicopter and were visited for 12–15 days. Most records were documented with photographs, sound-recordings and specimens collected using mist-nets. Specimens were prepared as study skins or preserved whole in spirit, and have been deposited in the ornithological collection of the Pontificia Universidad Católica del Ecuador, Quito (QCAZ). Sound-recordings have been uploaded to the xeno-canto website (www.xeno-canto.org). Elevation and coordinates for sites were obtained in the field using GPS data (Table 1). Distributional information cites Ridgely & Greenfield (2001) and taxonomy follows Remsen *et al.* (2011).

TABLE 1
Locations of bird records mentioned in the text (see Fig. 1).

| Sample sites | Coordinates | Elevation (m) |
|---|---|---|
| Site 1 | 01°27′S, 77°26′W | 270–380 |
| Site 2 | 01°28′S, 77°29′W | 340–440 |
| Site 3 | 01°28′S, 77°31′W | 382–553 |
| Site 4 | 01°25′S, 77° 40′W | 643–700 |
| Diez de Agosto road | 01°23′S, 77°45′W | 1,000–1,100 |
| Paparahua community | 01°29′S, 77°25′W | 329–555 |
| Kurintza community | 01°30′S, 77°30′W | 352–473 |
| Tarangaro community | 01°23′S, 77°23′W | 328–446 |

## Species accounts

**CATTLE EGRET** *Bubulcus ibis*
An individual of this widespread species was photographed beside the río Lliquino at site 1 on 14 June 2008. Previous records from prov. Pastaza are from Kapawi Lodge at the frontier with Peru. My observation presumably involved a wandering bird because, although the species is a common resident in the eastern foothills and north-east Amazonia, breeding colonies are unknown in the eastern lowlands (Ridgely & Greenfield 2001).

**GREY-BELLIED HAWK** *Accipiter poliogaster*
An adult of this little-known hawk was observed in a patch of secondary forest at site 1 on 1 March 2008. The following diagnostic features were noted in good light, excluding confusion with similar forest raptors (i.e. *Micrastur*): the bird was an adult, having a very dark head and even blacker cap, the mask extending to the throat, and no extensive naked facial area. Back dusky grey and underparts appeared white. Tail black with three broad grey bands and a white tip. Irides red with a yellow cere and tarsi. Size and shape similar to Collared *Micrastur semitorquatus* and Slaty-backed Forest Falcons *M. mirandollei*, which were both present in the area. Confusion with Collared Forest Falcon is improbable given its distinctive facial pattern, and this species also has dark ear-coverts, an olive-yellow facial area and dark irides (pers. obs.). Slaty-backed is more similar to Grey-bellied Hawk, but it lacks a capped or hooded effect, has a more extensive naked facial area, and has narrower tail bands (Ferguson-Lees & Christie 2001). The bird at Villano matched the illustration in Hilty & Brown (1986) and corresponded to the 'capped' or grey-faced variant, not to the hooded type (Ferguson-Lees & Christie 2001, Restall *et al.* 2006). Published records of Grey-bellied Hawk from Ecuador are from just nine localities (Sarayacu in Pastaza is that closest to the Villano), indicating its extreme rarity in the country; virtually all known records are from pristine habitats (Ridgely & Greenfield 2001, Howell 2002).

**GREY-NECKED WOOD RAIL** *Aramides cajanea*
Three were sound-recorded near Paparahua community on 23 July 2008 (XC77715). They were not seen but were identified by their distinctive voice (Moore *et al.* 2009) and the species is well known to the indigenous residents of the Villano area. Previous records in Ecuador are solely from the upper Napo with one record from the Kapawi area. As Grey-necked Wood Rail occurs throughout the lower Pastaza basin in Peru (Schulenberg *et al.* 2007), I suspect that it is more widespread in Ecuador than published records suggest.

**WHITE-BEARDED HERMIT** *Phaethornis hispidus*
Several mist-netted and observed at sites 1–2 and Paparahua community, in flooded evergreen forest. Four specimens were collected: QCAZ 3102, 3159, 3161, 3168. These are the westernmost records in Pastaza, but are unsurprising, given the species' broad distribution across Amazonia (Restall *et al.* 2006).

**LONG-BILLED STARTHROAT** *Heliomaster longirostris*
A male observed on the south bank of the río Villano at Kurintza community, perched in an *Inga edulis* (Fabaceae) tree on 22 August 2008. It was a male based on the ruby throat, although the blue on the head was not very conspicuous. Confusion with other species is unlikely, because no species of similar size has an equally long, straight bill. Previous records in the eastern lowlands are from five localities on the Napo (Ridgely & Greenfield 2001). My record is the first for Pastaza and the species is unknown in adjacent Peru

(Schulenberg *et al.* 2007). This hummingbird's distribution in the eastern lowlands of Ecuador and Peru remains poorly understood. As it prefers secondary forest and edges, some authors have suggested that the species is probably spreading due to deforestation (Ridgely & Greenfield 2001).

**WHITE-NECKED PUFFBIRD** *Notharchus hyperrhynchus*
This species had been recorded south of the río Yasuní only in the Kapawi area (Ridgely & Greenfield 2001). I observed one at Kurintza community on 18 August 2008, perched in a tall secondary forest; it did not vocalise. This record confirms Ridgely & Greenfield's (2001) suspicion that it occurs in the Pastaza drainage. There is an unpublished record from the Tena area, Napo province (pers. obs.), but the species is probably rare near the Andes.

**BLACK-FRONTED NUNBIRD** *Monasa nigrifrons*
Uncommon in flooded forest along the río Villano and one was photographed, on 14 June 2008, on the north bank of the Lliquino, a small tributary of the Villano, at site 1, where a flock was tape-recorded near Paparahua community on 22 July 2008. The species was also observed at two further localities, at site 2 and around Tarangaro community. Black-fronted Nunbird is known primarily from the Napo and Aguarico drainages, and my records indicate that it occurs at elevations up to at least 500 m in Pastaza.

**WHITE-EARED JACAMAR** *Galbalcyrhynchus leucotis*
One observed at site 2 on 12 May 2008 perched on a *Cecropia* (Urticaceae) tree in flooded forest beside the río Lliquino. In Pastaza, White-eared Jacamar is known only from a 19th century specimen from the río Copotaza, a small tributary of the Pastaza that flows south of Sarayacu, and from recent sightings at Kapawi (Ridgely & Greenfield 2001). My record indicates that *G. leucotis* occurs near the Andes from Sucumbíos to Pastaza, and extends the known range 28 km north-west.

**CREAM-COLOURED WOODPECKER** *Celeus flavus*
A male was observed twice at site 2, at 400 m, in a subcanopy mixed-species flock including Squirrel Cuckoo *Piaya cayana*, White-fronted Nunbird *Monasa morphoeus*, Gilded Barbet *Capito auratus*, and Russet-backed *Psarocolius angustifrons* and Crested Oropendolas *P. decumanus*. Cream-coloured Woodpecker has primarily been recorded from the Napo and Aguarico drainages, but recent reports from Kapawi and my observations suggest that the species ranges widely in Pastaza.

**BROWN-RUMPED FOLIAGE-GLEANER** *Automolus melanopezus*
Two were mist-netted, photographed and collected (QCAZ 3230, 3230) in evergreen flooded forest at Tarangaro community, on 25 September 2008. South of the Napo, records are limited to Kapawi and Canelos (Ridgely & Greenfield 2001). Tarangaro is *c.*45 km east of Canelos and 150 km north-west of Kapawi, suggesting that Brown-rumped Foliage-gleaner could occur widely in central Amazonian Ecuador.

**CHESTNUT-CROWNED FOLIAGE-GLEANER** *Automolus rufipileatus*
One was trapped, photographed and collected (QCAZ 3226) at Tarangaro community, on 25 September 2008. It had white irides, but did not differ from Limoncocha specimens in plumage (QCAZ 1633, 1636). This specimen confirms the species' presence in the Pastaza drainage. The species generally prefers *Gynerium* cane growing on floodplains or on river

islands (Ridgely & Greenfield 2001), but my record comes from a flooded area with no *Gynerium*.

**CHESTNUT-WINGED HOOKBILL** *Ancistrops strigilatus*
One observed in forest at Tarangaro community on 21 September 2008 was with a large mixed-species flock of insectivores and foraged 12 m above ground. Previous Pastaza records are from Sarayacu and Kapawi (Ridgely & Greenfield 2001). My record suggests that it may be more widespread in Pastaza.

**SHORT-BILLED LEAFTOSSER** *Sclerurus rufigularis*
One mist-netted and collected (QCAZ 3240) at 700 m at site 4, on 1 December 2008. In Ecuador, the species has mainly been recorded in the Napo drainage, but is also known from sightings at Kapawi, Pastaza. All previous records are from below 300 m, so my record increases the species' known altitudinal range by 400 m and confirms its presence midway between the Napo and Pastaza rivers. It is possible that, like other low-density species, this leaftosser will prove to be more widespread than presently thought.

**LONG-BILLED WOODCREEPER** *Nasica longirostris*
The first record was of an individual in a patch of flooded evergreen forest at site 1, where one was heard and observed foraging in a large bromeliad in February 2008. Repeated sightings and sound-recordings of a pair were obtained in June 2008 at the same site (XC76038). Long-billed Woodcreeper is known in southernmost Pastaza only at Laguna Siguin, Kapawi and Sarayacu (Ridgely & Greenfield 2001), but it is probably widespread in prov. Pastaza.

**OLIVE-STRIPED FLYCATCHER** *Mionectes olivaceus*
First observed on 17 June 2008 at site 1. Subsequently, two were photographed and collected (QCAZ 3182, 3239) at the same location and Paparahua community at 400 m. The easternmost records in Ecuador are from Jatun Sacha on the upper Napo, at 500 m (Ridgely & Greenfield 2001). My specimens indicate that the species could be found below 400 m along the Villano, where a hillier terrain than in the north-east lowlands predominates. It has been suggested that Olive-striped Flycatcher might be only an altitudinal migrant or vagrant to the eastern lowlands (Ridgely & Greenfield 2001).

**BROWNISH TWISTWING** *Cnipodectes subbrunneus*
One was mist-netted and collected (QCAZ 3128) at site 1 on 25 June 2008. Apparently widespread in the eastern lowlands, but most previous records are from the north-east.

**CATTLE TYRANT** *Machetornis rixosa*
Three seen and one photographed at site 1 on 20 February 2008. Additional photographs of one perched on an *Inga* sp. tree obtained on 21 June 2008. Previous records from Ecuador are mainly from Coca airport, prov. Orellana (Ridgely & Greenfield 2006). My record is the first in Pastaza and the southernmost in Ecuador. The species seems to have recently invaded following the opening of large forest clearings in the Ecuadorian Amazon, as it was unknown in the country prior to 1991 and had not been recorded in adjacent Peru (N. Krabbe pers. comm.).

**DWARF TYRANT-MANAKIN** *Tyranneutes stolzmanni*
One was mist-netted at 700 m at site 4 on 28 November 2008. This species mostly occurs below 500 m but has been recorded to 900 m at Bermejo, prov. Sucumbíos (Ridgely & Greenfield 2001).

**BLACK-NECKED RED COTINGA** *Phoenicircus nigricollis*
Rare in Ecuador, being absent even from large tracts of undisturbed and seemingly suitable habitat. At Tarangaro community, a male was observed eating fruits 5 m above the ground on 17 September 2008. This was the only record, despite specifically searching for a lek. I agree with Ridgely & Greenfield (2001) that the species might be considered Near Threatened due to its rarity, sensitivity to anthropogenic disturbance and its patchy distribution (Trail & Donahue 1991, Stotz *et al.* 1996).

**WHITE-THIGHED SWALLOW** *Neochelidon tibialis*
A pair mist-netted and collected (QCAZ 3021, 3028) beside a forest stream at site 1 in February 2008. Local and scarce in eastern Ecuador, it is primarily known from the foothills and the only previous records from Pastaza are from Kapawi (Ridgely & Greenfield 2001).

**RED-CAPPED CARDINAL** *Paroaria gularis*
One trapped in a mist-net set for bats at site 1 on 11 January 2008 was photographed and released (C. Boada pers. comm.). Previous reports in Pastaza are from Laguna Siguin (not located) and Kapawi (Ridgely & Greenfield 2001). This record indicates that it occurs to 400 m on the Villano. However, the species seems extremely rare along this river (possibly a vagrant), because I was unable to find it during subsequent visits to the area.

**WHITE-LINED TANAGER** *Tachyphonus rufus*
A pair photographed at Paparahua community, on 15 July 2008, perched on an exposed branch. The presence of both sexes precluded confusion with other species of *Tachyphonus* present in the area. This record supports the suggestion of Ridgely & Greenfield (2001) that the species might be increasing in the eastern lowlands in response to forest clearance.

**SHORT-BILLED HONEYCREEPER** *Cyanerpes nitidus*
A female foraged with a large mixed-species canopy flock of tanagers and insectivores in a patch of *Cecropia* trees *c.*1 km west of Paparahua community, on 23 July 2008. Confidently identified through direct comparison with a female Purple Honeycreeper *C. caeruleus* permitting me to note their different leg colours, the shorter bill of the present species (an especially useful character) and its distinctive face pattern with contrasting dark lores. Known in Ecuador from a few scattered sightings, mostly in the north-east, with the exception of records from Kapawi, Pastaza (Ridgely & Greenfield 2001). Its distribution requires further study, but this record and those from Kapawi suggest that it could be more widespread than currently supposed.

**RUFOUS-COLLARED SPARROW** *Zonotrichia capensis*
A pair feeding a juvenile photographed near Diez de Agosto, at 1,000 m, on 14 February 2008. Rufous-collared Sparrow is widespread in the Ecuadorian Andes with records at 1,500–3,800 m. However, in recent years it seems to be expanding to the eastern foothills following deforestation. Recent records are from Misahualli, Tena, and Archidona in Napo (at 395–500 m) and in Loreto (430 m) (P.-Y. Henry unpubl.). My record confirms breeding in this region.

**GREEN OROPENDOLA** *Psaracolius viridis*
Several individuals and flocks observed across the entire study area, usually in upland forest. Seen within most mixed-species flocks of frugivores, but such flocks were rare. One sound-recorded at site 1 on 25 June 2008. Except for sightings from Kapawi, in the eastern lowlands *P. viridis* had not been recorded south of the río Arajuno. My records extend its known range in Pastaza 150 km north-west, and suggest that it may be more widespread than thought.

**CASQUED OROPENDOLA** *Clypicterus oseryi*
One of the most frequently observed oropendolas in the study area. First recorded in the vicinity of site 1 in February 2008, but subsequently found along the río Villano up to 500 m at site 3 and around Paparahua community. Sound-recordings were obtained (XC77711), mainly at Kurintza (where photographs were also obtained), and sites 1–2. These records extend its range up to 500 m in Pastaza. According to Ridgely & Greenfield (2001), *C. oseryi* appears to be rare and uncommon near the Andes, but my records indicate that the species has been overlooked in Pastaza and extend its range 27 km east from Sarayacu and 150 km north from Kapawi.

**RED-RUMPED CACIQUE** *Cacicus haemorrhous*
A pair observed and sound-recorded with other icterids at Kurintza community (400 m) on 16 August 2008. First reported in Ecuador from Sarayacu and subsequently at Montalvo; recently it has also been recorded below 300 m, mostly in the Napo drainage in hilly *terra firme* forest, but it has also been seen at Kapawi. Given all previous and recent records in Pastaza, I suggest that the species might occur along the northern río Pastaza in Ecuador, although it has not been recorded south of this river in Peru (Schulenberg *et al.* 2007).

**PALE-EYED BLACKBIRD** *Agelasticus xanthophthalmus*
Three were observed and a male sound-recorded (XC75483) on 26 June 2008 at site 1. They were observed in grass and cane beside an oxbow lake. The male was perhaps a subadult as it had a streaked throat, although its eyes were yellow and the rest of its plumage, as well as the tarsi and bill, were black as in adults. The group appeared to be resident in the area because one was also present in February 2008. The species was not recorded elsewhere in the study region, despite the presence of similar emergent vegetation around oxbow lakes, its preferred habitat (Orians & Orians 2000). Pale-eyed Blackbird was previously known from just three localities in Ecuador and my record is the southernmost. The reasons for its rarity are unknown and I concur with Ridgely & Greenfield (2001) that it merits Near Threatened status in Ecuador.

The records reported here contribute to our understanding of the distribution of Ecuadorian birds, by amplifying the known ranges of several species. Also, these records indicate that the distribution of birds in Ecuadorian Amazonia merits additional study. It is important to determine the expansion of some species associated with cleared areas as a result of deforestation. Similarly, the causes of rarity of some species demand clarification in order to fine-tune conservation action.

**Acknowledgements**
My research was funded by Eni E&P Division and Agip Oil Ecuador and was undertaken with the participation of Fauna & Flora International. Any comments, interpretations or conclusions made are those of the author, and are not necessarily agreed with or supported by Agip Oil Ecuador or Eni E&P Division. The research was authorised by the Ecuadorian Ministry of Environment, permission no. 010-IC-FAU/FLO-

DREN-P/MA. Thanks to H. Navarrete, V. Navarrete and M. Benalcázar for logistical arrangements, C. Boada and P.-Y. Henry for sharing their observations, and J. M. Galarza, D. Guarderas, A. Sola and C. Borja for assistance during the field work. A. Bustos and S. Burneo helped with the GIS figure and data, and C. Keil with the English translation. N. Krabbe made useful comments on the manuscript, as did J. Chaves and J. F. Freile.

References:

Alvarez-Alonso, J. & Whitney, B. M. 2003. New distributional records of birds from white-sand forests of the northern Peruvian Amazon, with implications for biogeography of northern South America. *Condor* 105: 552–566.

Blake, J. G. 2007. Neotropical forest bird communities: a comparison of species richness and composition at local and regional scales. *Condor* 109: 237–255.

Buitrón, G. & Freile, J. F. 2006. Registros inusuales de aves migratorias y de bosques subtropicales en Quito, Ecuador. *Cotinga* 26: 54–56.

Canaday, C. 1997. Loss of insectivorous birds along a gradient of human impact in Amazonia. *Biol. Conserv.* 77: 63–77.

Canaday, C. & Ribadeneyra, J. 2001. Initial effects of a petroleum operation on Amazonian birds: terrestrial insectivores retreat. *Biodiver. & Conserv.* 10: 567–595.

Chapman, F. M. 1926. The distribution of bird-life in Ecuador. *Bull. Amer. Mns. Nat. Hist.* 55: 1–784.

Cisneros-Heredia, D. 2006. Notes on breeding, behaviour and distribution of some birds in Ecuador. *Bull. Brit. Orn. Cl.* 126: 153–164.

Ferguson-Lees, J. & Christie, D. A. 2001. *Raptors of the world*. Houghton Mifflin, Boston, NY.

Freile, J. F. 2004. Range extensions and other noteworthy and new bird records from mainland Ecuador. *Bull. Brit. Orn. Cl.* 124: 188–202.

Freile, J. F. & Chaves, J. 2004. Interesting distributional records and notes on the biology of bird species from a cloud-forest reserve in north-west Ecuador. *Bull. Brit. Orn. Cl.* 124: 6–16.

Guevara, E., Solano, A. & Buitrón, G. 2008. Noteworthy records from the eastern Andean slopes of northern Ecuador. *Orn. Colombiana* 7: 78–82.

Henry, P.-Y. 2005. New distributional records of birds from Andean and western Ecuador. *Cotinga* 23: 27–32.

Hilty, S. L. & Brown, W. L. 1986. *A guide to the birds of Colombia*. Princeton Univ. Press.

Howell, S. N. G. 2002. Additional information on the birds of Ecuador. *Cotinga* 18: 62–65.

INAMHI. 2006. *Anuario meteorológico*. Instituto Nacional de Meteorología e Hidrografía, Quito.

Moore, J. V., Krabbe, N., Lysinger, M., Lane, D. F., Coopmans, P., Rivadeneyra, J. & Ridgely, R. S. 2009. *The birds of eastern Ecuador: the lowlands*. CDs. John V. Moore Nature Recordings, San Jose, CA.

Orians, G. & Orians, E. N. 2000. Observations of the Pale-eyed Blackbird in southeastern Peru. *Condor* 102: 956–958.

Remsen, J. V., Cadena, C. D., Jaramillo, A., Nores, M., Pacheco, J. F., Robbins, M. B., Schulenberg, T. S., Stiles, F. G., Stotz, D. F. & Zimmer, K. J. 2010. A classification of the bird species of South America. www.museum.lsu.edu/Remsen/SACC Baseline.html (accessed December 2010).

Restall, R., Rodner, C. & Lentino, M. 2006. *Birds of northern South America*. Christopher Helm, London.

Ridgely, R. S. & Greenfield, P. J. 2001. *The birds of Ecuador*. Cornell Univ. Press, Ithaca, NY.

Ridgely, R. S. & Greenfield, P. J. 2006. *Aves del Ecuador*. Academia de Ciencias Naturales de Filadelfia & Fundación Jocotoco, Quito.

Schulenberg, T. S., Stotz, D. F., Lane, D. F., O'Neill, J. P. & Parker, T. A. 2007. *Birds of Perú*. Princeton Univ. Press.

Stotz, D. F., Fitzpatrick, J. W., Parker, T. A. & Moskovits, D. K. 1996. *Neotropical birds: ecology and conservation*. Chicago Univ. Press.

Tallman, D. & Tallman, E. 1977. Adiciones y revisions a la lista de la avifauna de Limoncocha, Provincia del Napo, Ecuador. *Rev. Pont. Univ. Cat. Ecuador* 16: 217–224.

Trail, P. W. & Donahue, P. 1991. Notes on the behavior and ecology of the red-cotingas (Cotingidae: *Phoenicircus*). *Wilson Bull.* 103: 539–551.

Vogt, C. 2007. High-elevation records of bird species from Rucu Pichincha Volcano, Ecuador. *Cotinga* 26: 81–83.

*Address*: Museo de Zoología, Escuela de Biología, Pontificia Universidad Católica del Ecuador, Casilla 17–01–2184, Quito, Ecuador, e-mail: galobuitronj@yahoo.es

© British Ornithologists' Club 2011

# Notes on the distribution and natural history of bird species in the Chocó bioregion of Ecuador

*by Alejandro Solano-Ugalde*

*Received 31 March 2011*

SUMMARY.—Here I present new information for 14 bird species in the Chocó bioregion of Ecuador. Novel distributional records are presented for eight species, including two globally Endangered (Baudó Guan *Penelope ortoni* and Banded Ground Cuckoo *Neomorphus radiolosus*) and one Vulnerable species (Brown Wood Rail *Aramides wolfi*). At the national level, new data are provided for four Endangered and two Vulnerable species. Additionally, I present natural history data to supplement the previously limited knowledge concerning five species, including the first description of a nest in the wild of Orange-breasted Fruiteater *Pipreola jucunda*. Of interest is the first known instance of a Dendrocolaptidae (Strong-billed Woodcreeper *Xiphocolaptes promeropirhynchus*) predating a nest of a trochilid (Brown Inca *Coeligena wilsoni*), and the apparent extirpation of a local population of Baudó Guan.

The Chocó bioregion is defined as an area generally restricted to western Colombia and north-west Ecuador. Given high levels of biodiversity and endemism (greater than in any other area in the Americas), this bioregion is of high priority for global conservation and is listed as an Endemic Bird Area (Stattersfield *et al.* 1998). Although Ridgely & Greenfield (2001) summarised a huge body of information on the avifauna of the Ecuadorian part of this bioregion, many gaps remain especially in relation to our knowledge of natural history, species distributions and habitat use. More recently, fresh information has been presented on the distribution (Freile & Chaves 2004, Henry 2005, Álava *et al.* 2007), natural history (Karubian *et al.* 2003, Arcos-Torres & Solano-Ugalde 2007, Solano-Ugalde *et al.* 2010) and status (Freile *et al.* 2003, Jahn *et al.* 2007) of birds in the region, including some of high conservation concern such as Banded Ground Cuckoo *Neomorphus radiolosus* (Solano-Ugalde & Arcos-Torres 2007). While these publications further our understanding of the species in question, they point to the need for further data to support the implementation of sound conservation strategies for the Chocó bioregion.

Here I present novel information on the distribution and natural history of 14 species of Chocó endemics (combining the assessments in Stattersfield *et al.* 1998 and Ridgely & Greenfield 2001). Observations were made during bird surveys and monitoring, and while leading birding trips throughout the region. The following accounts summarise my observations, whilst a summary of the localities visited is presented in Table 1.

## Species accounts

**BERLEPSCH'S TINAMOU** *Crypturellus berlepschi*

An adult was observed at close range (*c.*4 m) within primary forest at Reserva Mangaloma on 14 February 2007. The wholly sooty black body with a distinctive reddish-orange mandible and tarsi, and striking yellow-orange irides were diagnostic. The bird was also heard vocalising twice during a one-hour period. At least one other record is available from the same reserve in 2007 (R. Jonsson pers. comm.), and a sighting in late 2009 suggests that the species occurs in small numbers in the area. Previous records in Ecuador are mainly from prov. Esmeraldas, with a few from Pichincha. Most known localities are below 300

TABLE 1
Localities studied in north-west Ecuador, 2006–10.

| Site | Province | Elevation | Coordinates | Principal habitat / life zone |
|---|---|---|---|---|
| Humedal de Yalare | Esmeraldas | 20 m | 01°05'N, 78°50'W | Flooded lowlands |
| Reserva Canandé | Esmeraldas | 500 m | 00°43'N, 79°02'W | Foothills and lower subtropics |
| Bosque Protector Los Cedros | Imbabura | 1,200 m | 00°18'N, 78°46'W | Lower subtropics |
| Reserva Mariposas y Guañas | Pichincha | 600 m | Unavailable | Foothills and lower subtropics |
| Reserva Mangaloma | Pichincha | 600–900 m | 00°05'N, 79°00'W | Foothills and lower subtropics |
| Reserva Yanacocha | Pichincha | 3,200 m | 00°10'S, 78°35'W | Upper temperate |
| Reserva Las Gralarias | Pichincha | 2,200 m | 00°00'S, 78°44'W | Subtropical montane forest |
| Reserva Inti Llacta | Pichincha | 1,800 m | 00°03'N, 78°42'W | Subtropical montane forest |
| Refugio Paz de las Aves | Pichincha | 1,950 m | 00°00'N, 78°42'W | Subtropical montane forest |
| Bosque Protector Mashpi | Pichincha | 1,400 m | 00°09'N, 78°50'W | Lower subtropics |

m, but a specimen was taken at 700 m in the 'Mindo / Milpe' region, although this has been considered controversial because both sites are generally considered to be higher in elevation (Ridgely & Greenfield 2001). However, Milpe gorge to the río Pachijal and nearby Chaltayacu are at the correct elevation and possess appropriate habitat (S. Olmstead pers. comm.). At *c.*800 m, the Mangaloma record is the highest for the country and one of the most recent for Pichincha, together with unpublished observations from Silanche Bird Sanctuary (G. Buchelli & D. Brinkhuizen pers. comm.) and the Charco Vicente trail, in Cotacachi-Cayapas Reserve (B. Palacios *in litt.* 2011). The species occurs to 500 m in Colombia, with a single record at 900 m from the Anchicayá Valley (Hilty & Brown 1986). In Ecuador it is considered Endangered (Mena-Valenzuela & Jahn 2002).

**BAUDÓ GUAN** *Penelope ortoni*
During bird surveys at Reserva Mangaloma in 2006–08, at least two pairs of this globally Endangered cracid (BirdLife International 2011) were found, initially by their distinctive vocalisations. However, more recent visits, by reserve personnel and birdwatchers, have failed to find the species. In Ecuador it is considered rare to locally uncommon by Ridgely & Greenfield (2001), who suggested that the species receives no adequate protection in the country. In Pichincha there appear to be no other sites where the species still occurs, and the suggestion that it disappears even in the face of just light hunting pressure (O. Jahn *in* Ridgely & Greenfield 2001) is corroborated by my experience at Mangaloma. The species' conservation in Ecuador is a priority. In Colombia, it is known from only a few localities (Hilty & Brown 1986), and in Ecuador habitat loss and its sensitivity to hunting has rendered the species Endangered (Jahn & Mena-Valenzuela 2002).

**BROWN WOOD RAIL** *Aramides wolfi*
On 8 December 2007 two were heard vocalising in the Yalare swamp, along the 'Costanera' road from San Lorenzo to Esmeraldas, and at least two were briefly observed thereafter. Again, on 21 February 2008, birds were heard calling and, on 15 March 2008, two pairs were heard interacting and two birds were observed walking across the main road. The Yalare wetlands represent a distinctive and unique habitat restricted to the north-west lowlands of Ecuador, known locally as *guandal* (Freile & Santander 2005). This locality represents a new site for this rare and very local rallid, which occurs at only a few sites in the country (Ridgely & Greenfield 2001, Freile *et al.* 2004, Álava *et al.* 2007, Freile 2008), although there is

also a record from Silanche Bird Sanctuary, Pichincha (B. Palacios *in litt.* 2011). The species is considered Endangered nationally (Hilgert 2002) and Vulnerable globally (BirdLife International 2011).

**BANDED GROUND CUCKOO** *Neomorphus radiolosus*

I encountered a Banded Ground Cuckoo at Reserva Canandé on 8 January 2008. It ran across the trail 5 m ahead of me, hopped onto a 1 m-high stump, and remained perched for almost one minute, constantly raising and lowering its crest, and cocking and partially spreading its tail. With a single hop, the bird descended to the ground and immediately disappeared in the dense understorey. Within 3–5 minutes, the bird began vocalising for almost 15 minutes (and was perhaps joined by a second bird?). An army ant swarm (*Eciton* sp.) was in the vicinity and was attended by two Plain-brown Woodcreepers *Dendrocincla fuliginosa* and a pair of Immaculate Antbirds *Myrmeciza immaculata*. Although new information concerning the species' breeding biology is available (Karubian *et al.* 2007), since the publication of Ridgely & Greenfield (2001) only one new locality has been documented (Solano-Ugalde & Arcos-Torres 2007), although there is an unpublished record of two at Cerro Dogola, Mache Chindul Reserve (B. Palacios *in litt.* 2011). The species is considered Endangered nationally and globally (Greenfield 2002, BirdLife International 2011).

**ROSE-FACED PARROT** *Pionopsitta pulchra*

A flock of six was observed around the headquarters at Reserva Los Cedros on 31 December 2009, and during the following days the species was observed consuming *Psidium guajava* (Myrtaceae) fruits. Apparently, the species has been resident at the reserve since at least 1998 (M. Cooper pers. comm.). Additionally, on 3 December 2008, a flock of ten was observed flying over the pass (1,500 m) above La Delicia, en route to the nearby Bosque Protector Mashpi. This parrot's distribution, status and taxonomy were discussed by Ridgely & Greenfield (2011), who knew of no records from prov. Imbabura and none above 1,300 m. However, the species' substantial decline due to deforestation and hunting (P. Mena Valenzuela & O. Jahn *in litt.* 2011) apparently were insufficient to list it as threatened in Ecuador (Ridgely & Greenfield 2001), although it was subsequently treated as Vulnerable (Jahn & Mena-Valenzuela 2002). During informal surveys of illegal pet markets in north-west Pichincha in 2009–10, I observed two cages with juvenile Rose-faced Parrots. Given recent declines in north-west Pichincha (e.g. along the Milpe Road, San Miguel de Los Bancos; pers. obs. 2006–10) and knowledge that the species is captured for the pet trade (an important but previously unknown threat), its conservation status in Ecuador might require reassessment.

**INDIGO-CROWNED QUAIL-DOVE** *Geotrygon purpurata*

First recorded at Reserva Mangaloma in 2006, where it has regularly been seen since. On 13 August 2008, a pair was seen at Reserva Mariposas y Guañas, in the middle río Pachijal drainage, where a pair has been tamed to eat pieces of banana from the ground since then (M. Muñoz pers. comm.; pers. obs.). Considered rare to uncommon in Ecuador, with just one previously known locality (under modern political divisions) in Pichincha; Simón Bolívar Road (Ridgely & Greenfield 2001). The species' apparent preference for primary forest (*fide* Ridgely & Greenfield 2001) is supported by my observations, which are all from pristine habitat. These new localities, especially Mariposas y Guañas, are potentially good sites to further study the natural history of this elusive species. Hilty & Brown (1986) regarded it as a subspecies of Sapphire Quail-Dove *G. saphirina*, but from an Ecuadorian perspective *G. purpurata* is treated specifically and is ranked as Vulnerable due to its limited range and habitat preferences (Jahn & Mena-Valenzuela 2002).

**GORGETED SUNANGEL** *Heliangelus strophianus*
During the first week of October 2008, initially on the 7th, and until 20 November, an adult male was present at Reserva Yanacocha, where it visited one of the hummingbird feeders at a forest border along the Inca Ditch trail. Several times it was chased by a territorial Buff-winged Starfrontlet *Coeligena lutetiae*. This record, with an unpublished record from the reserve in 2005 (T. Santander pers. comm.), constitutes a new upper elevation for the species, which was previously known to reach 2,300 m (occasionally 3,000 m) in Ecuador (Ridgely & Greenfield 2001) and 2,800 m in Colombia (Hilty & Brown 1986).

**BROWN INCA** *Coeligena wilsoni*
On 17 November 2006, at Reserva Las Gralarias, I found an adult feeding two chicks at a mossy nest inside forest, 2 m above ground in a *Cinchona* sp. (Rubiaceae). The nest was revisited on 22 November and the chicks, mainly covered in brown down, weighed 7.5 and 8.1 g, respectively. External nest measurements were 73 mm wide × 65 mm tall, with a 100 mm 'tail' of hanging moss, and the cup was 35 mm wide × 25 mm deep. On 1 December I witnessed the chicks' predation by two Strong-billed Woodcreepers *Xiphocolaptes promeropirhynchus* moving through the understorey. Approaching the nest I heard contact calls between the woodcreepers. Waiting 8 m distant, I saw the first individual perch <10 cm from the cup and immediately grasp a chick and fly off to a nearby perch where it gulped its prey whole. Subsequently, the second bird approached the nest and took the other chick, which it consumed while perched nearby. An adult *C. wilsoni* appeared and emitted an incessant high-pitched, short, alarm note for *c.*1 minute, then left and did not return during the next ten minutes. There is a single breeding record from Ecuador (Greeney & Nunnery 2006) and, based on Schuchmann (1999), this is the first documented instance of predation of a hummingbird by a Dendrocolaptidae.

**PALE- MANDIBLED ARACARI** *Pteroglossus erythropygius*
A regular seasonal visitor to Reserva Inti Llacta (IL), where mostly seen during the less wet part of the year (June–September) in 2006–09. A similar pattern is observed at nearby Refugio Paz de las Aves, at 1,950 m (A. Paz pers. comm.), with a single record at 2,200 m above Bellavista (B. Palacios *in litt.* 2011). Recently recorded at IL in February 2009, when a juvenile was heard in second growth near the reserve headquarters. Although the natural history of the species was summarised by Berg (2001) there is limited information from the foothills and lower subtropical forest in Pichincha (Ridgely & Greenfield 2001); my records of juveniles with adults are in January–May. The species' altitudinal range was previously considered to reach 1,500 m (Ridgely & Greenfield 2001). Nationally, Pale-mandibled Aracari is considered Vulnerable (Jahn & Mena-Valenzuela 2002).

**CLUB-WINGED MANAKIN** *Machaeropterus deliciosus*
On 26 June 2008 a female-plumaged bird was mist-netted at Reserva Inti Llacta (IL). A week later the mechanical sound diagnostic of the species was heard on the same trail as the initial capture (in the headwaters of the río Pachijal), and since then there have been sporadic records suggesting year-round presence. Ridgely & Greenfield (2001) suggested that the species might be a seasonal altitudinal migrant. My records might reflect post-breeding dispersal as, at least in part of its range, the species breeds during the first half of the year (H. F. Greeney pers. comm.), and they also constitute a new max. elevation in Ecuador, where Club-winged Manakin was previously known to 1,500 m, whereas in Colombia the species regularly occurs to 1,900 m (Hilty & Brown 1986).

**ORANGE-BREASTED FRUITEATER** *Pipreola jucunda*
On 12 November 2008 A. Paz informed me of an active nest at Refugio Paz de las Aves. It was visited on 18 November and video-taped for three hours, but thereafter the nest was found abandoned. The nest was 4.5 m above the ground in a 7 m-tall *Palicourea* sp. (Rubiaceae) tree in semi-wooded pasture with nearby forest. Inside there was a dead chick weighing 14.5 g, mostly unfeathered with several conspicuous botfly larvae (Oestridae), and which measured: exposed culmen = 9.6 mm, nares to tip = 4.1 mm, tarsus = 17.3 mm. The bill and tarsus showed only hints of reddish, the gape yellowish olive, and the eyes were closed. The nest was cup shaped, measuring inside 81.3 mm (width) × 21.2 mm (depth), and externally 122.9 mm (width) × 38.1 mm (depth), with a tail of hanging moss of 67.4 mm. Externally the nest was composed of dead and live mosses, whilst internally the materials were bound to a network of interwoven fine twigs and fern fibres. Additionally, a pair with nesting material was observed briefly in old second growth at Reserva Inti Llacta on 13 December 2009. The species' natural history was briefly described by Samper (1992) and a pair with nesting material was observed in April in south-west Colombia (Strewe 2001). My record represents the first breeding data for the species in the wild, although nesting in captivity was described by Lint & Dolan (1966).

**BLACK SOLITAIRE** *Entomodestes coracinus*
On 3 December 2008 one was heard along the La Magusa Road in the surroundings of Bosque Protector Mashpi. Since then, I have encountered the species on eight of 15 visits to appropriate habitat (heavy moss forest), with at least one presumed territory, and have recorded max. 3 adults. In Ecuador the species is rare to uncommon and inconspicuous (Ridgely & Greenfield 2001), which together with habitat loss and fragmentation led to its classification as Near Threatened (Jácome 2002). Although the last-named author mentioned six localities where the species is apparently protected in Ecuador, none of these seems to possess an easy accessible resident population as at Mashpi.

**YELLOW-COLLARED CHLOROPHONIA** *Chlorophonia flavirostris*
I first recorded this species on 14 December 2007 at Reserva Inti Llacta, when I witnessed a pair vocalising and acrobatically feeding at a *Miconia* sp. (Melastomataceae) shrub in forest edge. Additionally, on 19 January 2009, at Refugio Paz de las Aves, a male was feeding at an Araliaceae tree in primary forest. Regarded as rare to locally common in the foothills and lower subtropics, albeit only as far south as Pichincha in Ecuador, where it occurs in small numbers and only seasonally (December–April; M. Lysinger *in litt.* 2001; Ridgely & Greenfield 2001). My records increase the species' the altitudinal range to 1,950 m, although in Colombia it occurs regularly to 1,900 m in the Anchicayá and Digua drainages, in dpto. Valle (Hilty & Brown 1986).

**MOSS-BACKED TANAGER** *Bangsia edwardsi*
On 14 February 2006, I observed an apparent juvenile at Reserva Inti Llacta (IL), the first record for the reserve. It was aged by the pinkish gape and overall subdued coloration. On 26 June 2010 a family party was in the buffer zone of Bosque Protector Mashpi, the juvenile being fed an unidentified insect by one of the adults after incessant begging. The same day a second family party was seen, but in this instance one of two juveniles was observed carrying moss to a nearby clump 6 m high in a tree, where a nest was apparently being constructed. The IL record constitutes a new altitudinal limit in Ecuador, with most previous records at 500–1,100 m, other than a record at 1,700 m in prov. Carchi (Ridgely & Greenfield 2001) and a single recent record at 1,650 m in Pichincha (Vogt 2007). The species is especially abundant in the area around Bosque Protector Mashpi. Besides a nest described

from Esmeraldas (Robbins & Glenn 1988), nothing concerning the species' breeding appears to have been published, making my records the first breeding data for Pichincha and the first confirmation of helpers at the nest in this tanager (Isler & Isler 1999).

Most of my records were made in reserves within one of Ecuador's most-visited regions by ornithologists, the Mindo area. Although it has received attention from national and international NGOs, as well as independent researchers (Kirwan & Marlow 1996), the data presented here prove how much remains to be discovered concerning the avifauna of this megadiverse area that includes three Important Bird Areas (Freile & Santander 2005). It is interesting to note that, for six of the 14 species mentioned here, an altitudinal range extension is reported, which is especially important given the severe loss of lowland forest in western Ecuador (Dodson & Gentry 1991, Freile & Santander 2005). Natural history studies and better data on distributions of species restricted to certain biogeographic regions remain a priority in Ecuador (Freile *et al.* 2006, Freile & Rodas 2008) yet, controversially, such studies are generally in decline (Beehler 2010). Given the conservation priority of the Chocó Endemic Bird Area, those observers and researchers with unpublished data are encouraged to share them via published and unpublished media. Exploring data-sharing initiatives wherein both scientific and citizen science participants can plan more effective conservation strategies should be a relatively easily achievable common goal for the future. For instance, around Mashpi, a proposal to create a new Important Bird Area is being evaluated, together with a watershed conservation initiative promoted by local people and Quito municipality. Lastly, in agreement with Freile & Rodas (2008), given evident declines for several species, updating the Ecuadorian Red Data Book for birds should be a priority.

**Acknowledgements**

Fundación Imaymana and the Natural History of Ecuador's Mainland Avifauna Group have provided constant support of my studies of the natural history of Chocó birds. J. Freile offered field assistance and shared relevant bibliography. The staff of Mangaloma, Canandé and Yanacocha reserves (Fundación Jocotoco), Reserva Tundaloma, Reserva Inti Llacta, Reserva Las Gralarias, Reserva Los Cedros, Refugio Paz de las Aves, and Reserva Mariposas y Guañas oversaw the logistical aspects of my work. S. Olmstead, G. Buchelli, D. Brinkhuizen, M. Cooper, T. Santander, A. Paz and M. Muñoz shared unpublished records. Neblina Forest birding tours facilitated access to several sites and tour participants supported my collecting data. Lastly, special gratitude to G. M. Kirwan, H. F. Greeney and B. Palacios for their comments which greatly improved the final version of the manuscript.

References:

Alava, J. J., Arosemena, X. & Angel, R. 2007. Brown Wood-Rail *Aramides wolfi* at El Canclón Lagoon, Manglares-Churute Ecological Reserve, Ecuador. *Cotinga* 27: 81–82.

Arcos-Torres, A. & Solano-Ugalde, A. 2007. First description of the nest, nest site, eggs and nestlings of Nariño Tapaculo (*Scytalopus vicinior*). *Orn. Neotrop.* 18: 445–448.

Beehler, B. M. 2010. The forgotten science: a role for natural history in the twenty-first century? *J. Field Orn.* 81: 1–4.

Berg, K. S. 2001. Notes on the natural history of the Pale-mandibled Aracari. *J. Field Orn.* 72: 258–266.

BirdLife International. 2011. IUCN Red List for birds. www.birdlife.org (accessed 3 March 2011).

Dodson, C. H. & Gentry, A. H. 1991. Biological extinction in western Ecuador. *Ann. Miss. Bot. Gard.* 78: 273–295.

Freile, J. F. 2008. New distributional records of birds from western Ecuador, and comments on the avifauna of Isla de La Plata. *Bull. Brit. Orn. Cl.* 128: 233–241.

Freile, J. F. & Chaves, J. A. 2004. Interesting distributional records of birds from a cloud-forest reserve in north-western Ecuador. *Bull. Brit. Orn. Cl.* 124: 6–16.

Freile, J. F. & Rodas, F. 2008. Conservación de aves en Ecuador: ¿cómo estamos y qué necesitamos hacer? *Cotinga* 29: 48–55.

Freile, J. F. & Santander, T. 2005. Áreas importantes para la conservación de las aves en Ecuador. Pp. 283–470 *in* Boyla, K. A. & Estrada, A. (eds.) *Áreas importantes para la conservación de las aves en los Andes tropicales: sitios prioritarios para la conservación de la biodiversidad*. BirdLife International & Conservation International, Quito.

Freile, J. F., Chaves, J. A., Iturralde, G. & Guevara, E. 2003. Notes on the distribution, habitat and conservation of the Cloud-forest Pygmy-owl *Glaucidium nubicola* in Ecuador. *Orn. Neotrop.* 14: 275–278.

Freile, J. F., Moreano, M. V., Bonaccorso, E., Santander, T. & Chaves, J. A. 2004. Notas sobre la distribución, historia natural y conservación de algunas aves amenazadas del suroccidente de Ecuador. *Cotinga* 21: 18–24.

Freile, J. F., Carrión, J. M., Prieto Albuja, F. & Ortiz Crespo, F. 2006. La ornitología en Ecuador: un análisis del estado actual del conocimiento y sugerencias para prioridades de investigación. *Orn. Neotrop.* 17: 183–202.

Greeney, H. F. & Nunnery, T. 2006. Notes on the breeding of north-west Ecuadorian birds. *Bull. Brit. Orn. Cl.* 126: 38–45.

Greenfield, P. J. 2002. Banded Ground-cuckoo (*Neomorphus radiolosus*). Pp. 146–147 *in* Granizo, T., Pacheco, C., Rivadeneira, M. B., Guerrero, M. & Suárez, L. (eds.) *Libro Rojo de las aves del Ecuador*. SIMBIOE, Conservación Internacional, EcoCiencia, Ministerio del Ambiente & UICN, Quito.

Henry, P.-Y. 2005. New distributional records of birds from Andean and western Ecuador. *Cotinga* 23: 27–32.

Hilgert, N. 2002. Brown Wood-Rail (*Aramides wolfi*). Pp. 128–129 *in* Granizo, T., Pacheco, C., Rivadeneira, M. B., Guerrero, M. & Suárez, L. (eds.) *Libro Rojo de las aves del Ecuador*. SIMBIOE, Conservación Internacional, EcoCiencia, Ministerio del Ambiente & UICN, Quito.

Hilty, S. L. & Brown, W. L. 1986. *A guide to the birds of Colombia*. Princeton Univ. Press.

Isler, M. L. & Isler, P. R. 1999. *The tanagers: natural history, distribution, and identification*. Smithsonian Institution Press, Washington DC.

Jácome, M. 2002. Black Solitaire (*Entomodestes coracinus*). P. 400 *in* Granizo, T., Pacheco, C., Rivadeneira, M. B., Guerrero, M. & Suárez, L. (eds.) *Libro Rojo de las aves del Ecuador*. SIMBIOE, Conservación Internacional, EcoCiencia, Ministerio del Ambiente & UICN, Quito.

Jahn, O. & Mena-Valenzuela, P. 2002. Pale-mandibled Aracari (*Pteroglossus erythropygius*). Pp. 260–261 *in* Granizo, T., Pacheco, C., Rivadeneira, M. B., Guerrero, M. & Suárez, L. (eds.) *Libro Rojo de las aves del Ecuador*. SIMBIOE, Conservación Internacional, EcoCiencia, Ministerio del Ambiente & UICN, Quito.

Jahn, O., Palacios, B. & Mena-Valenzuela, P. 2007. Ecology, population and conservation status of the Chocó Vireo *Vireo masteri*, a species new to Ecuador. *Bull. Brit. Orn. Cl.* 127: 161–166.

Kirwan, G. M. & Marlow, T. 1996. A review of avifaunal records from Mindo, Pichincha province, north-western Ecuador. *Cotinga* 6: 47–57.

Karubian, J., Carrasco, L., Cabrera, D., Cook, A. & Olivo, J. 2007. Nesting biology of the Banded Ground-Cuckoo (*Neomorphus radiolosus*). *Wilson J. Orn.* 119: 222–228.

Karubian, J., Castañeda, G., Freile, J. F., Salazar, R. T., Santander, T. & Smith, T. B. 2003. Nesting biology of a female Long-wattled Umbrellabird *Cephalopterus penduliger* in north-western Ecuador. *Bird Conserv. Intern.* 13: 351–360.

Lint, K. C. & Dolan, J. M. (1966) Successful breeding of the Orange-breasted Cotinga (*Pipreola jucunda*) in the San Diego Zoological Gardens. *Avicult. Mag.* 72: 18–20.

Mena-Valenzuela, P. & Jahn, O. 2002. Berlepsch's Tinamou (*Crypturellus berlepschi*). Pp. 98–99 *in* Granizo, T., Pacheco, C., Rivadeneira, M. B., Guerrero, M. & Suárez, L. (eds.) *Libro Rojo de las aves del Ecuador*. SIMBIOE, Conservación Internacional, EcoCiencia, Ministerio del Ambiente & UICN, Quito.

Ridgely, R. S. & Greenfield, P. J. 2001. *The birds of Ecuador*, vol. 1. Cornell Univ. Press, Ithaca, NY.

Robbins, M. B. & Glenn, G. S. 1988. First description of the nest and eggs of the Moss-backed Tanager (*Buthraupis* [*Bangsia*] *edwardsi*). *Condor* 90: 947–948.

Samper, K. C. 1992. Courtship and feeding in the Orange-breasted Fruiteater *Pipreola jucunda*. *Bull. Brit. Orn. Cl.* 112: 133–134.

Solano-Ugalde, A. & Arcos-Torres, A. 2007. Nuevo registro de Cuco Hormiguero Franjeado *Neomorphus radiolosus* en Pichincha, Ecuador. *Cotinga* 27: 79, 81.

Solano-Ugalde, A., Lima, R. & Greeney, H. F. 2010. The nest and eggs of the Beautiful Jay (*Cyanolyca pulchra*). *Orn. Colombiana* 10: 61–64.

Schuchmann, K.-L. 1999. Family Trochilidae (hummingbirds). Pp. 468–682 *in* del Hoyo, J., Elliott, A. & Sargatal, J. (eds.) *Handbook of birds of the world*, vol. 5. Lynx Edicions, Barcelona.

Stattersfield, A. J., Crosby, M. J., Long, A. J. & Wege, D. C. 1998. *Endemic Bird Areas of the world: priorities for biodiversity conservation*. BirdLife International, Cambridge, UK.

Strewe, R. 2001. Notes on nests and breeding activity of fourteen bird species from southwestern Colombia. *Orn. Neotrop.* 12: 265–269.

Vogt, C. A. 2007. Range extensions and noteworthy records for mainland Ecuador. *Bull. Brit. Orn. Cl.* 127: 228–233.

*Address*: Natural History of Ecuador Mainland Avifauna Group, Foch y Amazonas, Quito, Ecuador; Fundación Imaymana, Nayón, Quito, Ecuador; and Neblina Forest Birding Tours, Shyris e Isla Seymour, Quito, Ecuador, e-mail: jhalezion@gmail.com

© British Ornithologists' Club 2011

# Type specimens of the Imperial Woodpecker *Campephilus imperialis* (Gould, 1832)

*by Robert P. Prŷs-Jones*

*Received 3 May 2011*

Summary.—This paper addresses long-standing uncertainty regarding the composition of Gould's type series for his name *Picus imperialis*, 1832, and the source from which they were derived. There is good evidence that he had at least six specimens, collected by Damiano Floresi, to hand when he described the species, and these are identified with reasons. Further, a review is provided of information associated with all nine other early (*c.* pre-1860) specimens of which the author is aware, none of which can confidently be ascribed syntype status on current knowledge.

John Gould (1832) described, as *Picus imperialis*, a large and striking new species of woodpecker from, as he then thought, 'that little-explored district of California which borders the territory of Mexico'. Beyond the fact that he clearly had both male and female, he gave no indication as to the number of specimens he had before him and never elaborated on this in print subsequently. Likewise, although he discussed the fact that he had both sexes in correspondence, e.g. in a letter to Sir William Jardine on 19 December 1833 that included a sketch of the head of one (Sauer 1998, Snyder *et al.* 2009), there is no record of how many in total. However, Salvin & Godman (1888–97: 445) later stated unequivocally that Gould 'having obtained five or six skins of it, exhibited some of them at a meeting of the Zoological Society of London held 14th August, 1832'.

Salvin & Godman (1888–97: 445) further remarked that 'some years ago' [= 1876, according to the specimen labels] two of these skins, which from their manner of preparation they believed had originated from a mining engineer called Floresi, had passed from Gould, who died in 1881, into their possession. In 1888, Salvin and Godman in turn passed these specimens to the British Museum (Natural History) (BMNH), where they remain as BMNH 1888.8.5.60 (female) and 1888.8.5.61 (male). Neither retains any label from Gould or earlier, but one Salvin & Godman label on each notes 'Type of the species as descr. by Gould. Obtained in exchange for a sp. of *Phasianus chrysomelas*. See B. Asia Part XXVIII. O.S.' These specimens have consistently been highlighted as syntypes of the species since, e.g. by Hargitt (1890), Warren (1966) and Knox & Walters (1994).

However, in the apparent absence of evidence to the contrary (see below), all of Gould's 'five or six' skins must in principle be considered syntypes. An understanding of their current whereabouts and status is therefore important. Snyder *et al.* (2009) provided an appendix containing a summary of all Imperial Woodpecker specimens of which they became aware during their research, although they overlooked a few early ones (see below). Of these, only a small number, held at BMNH and the National Museums Liverpool, possess clear potential type status through their connection with Gould. For clarity in what follows, information on all specimens mentioned here is summarised in Table 1.

Before turning to the specimens themselves, however, it is relevant to consider who Floresi was, how certain it is that he collected the type specimens and how sound was restriction of the type locality of *Picus imperialis* to Bolaños, Jalisco, by Nelson (1898). Damiano Flores d'Arcais (G. Chiozzi *in litt.* May 2011), also known outside Italy as Damiano

TABLE 1
Summary details for all Imperial Woodpecker *Campephilus imperialis* specimens discussed in the text.

| Museum | Specimen reg. no. | Sex | Evidence for syntype status |
|---|---|---|---|
| Natural History Museum, Tring, UK[1] | 1838.5.12.108[2] | ♂ | Yes |
| " | 1855.12.19.325 | ♀ | Yes |
| " | 1888.8.5.60 | ♀ | Yes |
| " | 1888.8.5.61 | ♂ | Yes |
| " | unregistered | ♂ | No |
| National Museums Liverpool, UK | LM D3868 | ♂ | Yes |
| " | LM D3868a | ♀ | Yes |
| Museum Heineanum Halberstadt, Germany | MHH 7735 | ♂ | No |
| Staatliches Museum für Tierkunde, Dresden, Germany | 2774[3] | ♂ | No |
| Museo Civico di Storia Naturale, Milan, Italy | MSNM Av 31059 | ♂ | No |
| " | MSNM Av 27993 | ♀ | No |
| Academy of Natural Sciences, Philadelphia, USA | 19612 | ♀ | No |
| " | 19613 | ♂ | No |
| " | 19614 | ♀ | No |
| " | 19615 | ♂ | No |

[1] Formerly British Museum (Natural History)
[2] Also registered as 1988.21.6
[3] Specimen no longer extant (see text)

Floresi (e.g. Gould 1861: text to pl. 141, Palmer 1928; but spelling *per* G. Chiozzi *in litt.* June 2011), was perhaps best known ornithologically as a collector of hummingbirds, but Gould (1856) does explicitly record that he collected *Picus imperialis*. According to Palmer (1928: 277), Floresi was 'An Italian engineer in charge of a mine operated by an English company at Bolaños, Mexico, where, in 1845, he collected a hummingbird which was named in his honour'. This statement is concordant with the description by Gould (1861: text to pl. 139) of the new species *Selasphorus floresii* (since shown to be a hybrid) from a single specimen collected in Bolaños by Floresi and sent by the latter to George Loddiges in 1845.

However, elsewhere, Gould (1875: text to pl. 6) referred to two specimens of the trogon *Trogon neoxenus* that he received from Floresi sometime after 1836 as having been taken 'probably in the neighbourhood of the Real del Monte mines, as it was in that district that most of his birds were procured'. Gould (1856: 63) also stressed Floresi's connection with the Real del Monte mines, noting however that he 'travelled himself, and kept collectors, who penetrated into the remotest parts of that country'. The Real del Monte mines (20°08'N, 98°40'W) are in Hidalgo, some considerable distance from those at Bolaños (21°50'N, 103°49'W) in Jalisco. Although Floresi is known to have visited both sites, it was at Bolaños that he was based for a number of years (Todd 1977). Given that the Real del Monte area is also outside the recorded range of the Imperial Woodpecker, a type locality for the species in the vicinity of Bolaños seems highly probable. Floresi, who Gould considered an 'esteemed friend' (Sauer 2006: 111), died prior to May 1853 (Gould 1861: text to pl. 261, first published in a part dated 1 May 1853 [Coues 1879]), 'immediately on landing in Panama' (Gould 1861: text to pl. 142). Further research into the life of Floresi, whose name is also linked to other important Mexican bird specimens, would seem important and has begun (G. Chiozzi & R. P. Prŷs-Jones unpubl.).

Snyder *et al.* (2009: 151) listed two specimens in the National Museums Liverpool, LM D3868 (male) and LM D3868a (female), as 'received in 1851 from 13th Earl of Derby; J.

Gould syntypes?'. These were not mentioned by Wagstaffe (1978) in his list of avian types, although Wagstaffe did comment on the close relationship that Gould had with the Earl of Derby, whose collection, bequeathed to the city of Liverpool in 1851, forms the nucleus of the National Museums Liverpool bird collection. C. Fisher (*in litt.* December 2010 and March 2011) has confirmed that label information reveals that the Earl of Derby purchased the specimens directly from Gould. She further considers that this probably occurred during the 1830s, as they both have Lord Derby's original numbers on them, a system that he is thought to have changed during that decade.

Other specimens that seem likely on current evidence to have a claim to syntype status are held at BMNH. Knox & Walters (1994) reproduced the label data associated with each of them, but unfortunately also perpetrated several errors in interpretation. The oldest published list of Imperial Woodpecker specimens held at BMNH is that of Gray (1868), who listed three: a male from 'Mr. J. Gould's Collection'; another male lacking any collector data; and a female from 'the Zoological Society's Collection'. All lack date information and are recorded as from 'California', which until 1848 was still politically part of Mexico. This could suggest that Gould's Imperial Woodpecker specimens might have been shipped from California, though this must remain speculative.

Just over 20 years later, Hargitt (1890) corrected the locality data for these three specimens to Mexico and also noted that the data-less male and the 'Zoological Society' female were mounted for display (*cf.* Anon. 1892), whereas the 'Gould' male was a study skin. Although Knox & Walters (1994) referred to the two mounted specimens as 'Not found 1988', they remain on display at the museum's South Kensington site to the present day. It was formerly BMNH policy that specimens designated for display should first have their labels removed, and this is unfortunately true for these specimens. However, details for the 'Zoological Society' female can be determined from the relevant specimen register, which records BMNH 1855.12.19.325 as being a '*Picus imperialis*' purchased from the Zoological Society when it disbanded its museum in that year (Sharpe 1906, Wheeler 1997).

This Zoological Society of London (ZSL) specimen is almost certainly one of Gould's type series. Between 1828 and 1837, Gould was working for the ZSL, during which time at least some specimens received by him were deposited in the Society's museum, as he acknowledged in his letter of 19 December 1833 to Sir William Jardine, in which he wrote 'I received it [*Picus imperialis*] from California and have both sexes, at least they now form part of the collection of the Zoological Society' (Sauer 1998: 52). Furthermore, Malherbe (1861: 4) referred to a pair of Imperial Woodpeckers he had seen 'dans la collection de la Societé zoologique de Londres'. However, Gould also maintained his own collection and dealt in specimens on his own behalf during the period of his employment, as well as playing a role in the disposal of the ZSL's 'duplicate' specimens (Wheeler 1997). Importantly also, in 1857 he purchased the bird skins still remaining at the ZSL after the dissolution of its museum (Wheeler 1997). In the absence of any useful surviving bird catalogues, distinguishing clearly between ZSL and Gould specimens is difficult.

Knox & Walters (1994) assigned a registration number, BMNH 1988.21.6, to the 'Gould' male skin recorded by Gray (1868) and Hargitt (1890) because its label lacked any existing number. However, it is almost certainly BMNH 1838.5.12.108, recorded in the relevant register as '*Picus imperialis* Gould. S. America [*sic*]. Purch. Gould'; interestingly, this specimen series (1838.5.12) from Gould contained numbers of Mexican birds, largely from Tamaulipas. It is also probably the specimen mentioned in a letter of 23 July 1838 from Edwin Prince, Gould's secretary (Lambourne 1987), to Gould, who was then en route to Australia. Prince noted that on 18 July he went 'To Brit. Mus. and made out fresh a/cs for the Birds brought in which was included a *Picus imperialis* omitted by you' (Sauer 1998:

264). As such, it may well have been the first example of the species to reach the BMNH (but see below).

That it took around 30 years from the date of the first description of a species as striking as *Picus imperialis* for ornithologists to suggest in print that it originated from Mexico strongly suggests that only a very few batches of specimens reached Europe in the interim. There is in fact no evidence suggesting that Gould received more than one consignment, and good evidence for only one further consignment before 1860: that containing the four specimens received in or slightly before 1836 by John Taylor, a British mining magnate with major business interests in Mexico (Todd 1977), passed on by him to Victor Masséna, Duc de Rivoli, and which subsequently arrived at the Academy of Natural Sciences, Philadelphia, in 1846 (Gill 1995), where they remain (Snyder *et al.* 2009; N. H. Rice *in litt.* March 2011). However, the origins of a few early specimens remain to be established: the data-less BMNH male (Gray 1868); a male that Cabanis (1863) noted as present in the Museum Heineanum, now the Museum Heineanum Halberstadt (MHH); a male that Malherbe (1861) recorded in the Dresden Museum; and a pair that Malherbe (1861) noted as being in his own collection.

Many bird specimens received by the BMNH in the mid-19th century were registered under their generic names only, and this includes an array of '*Picus*' acquired from both Gould and the ZSL. A potential candidate specimen for the data-less BMNH male is the ZSL male mentioned above, although the lack of a donor's name in Gray (1868) suggests purchase via a dealer may have been involved. However, the provenance of such data-less specimens will only be established with certainty through discovery of relevant archival information. The Museum Heineanum male, now registered as MHH 7735, was acquired from G. A. Frank, a natural history dealer based in Amsterdam (B. Nicolai *in litt.* January 2011); its provenance is given by Cabanis (1863: 101–102) as '(West-) Mexico', but no collecting or acquisition date is either given or can be deduced.

No Imperial Woodpecker specimen now exists in the Staatliches Museum für Tierkunde, Dresden, but an inventory of April 1881 recorded that an otherwise data-less specimen from 'California' was then present (T. Töpfer *in litt.* April 2011). Its number was 2774, and the catalogue also bears the indication 'A.S.', meaning 'Alte Sammlung' ('old collection'), an abbreviation used for those birds that date from the pre-1849 collection. The lack of yellow underlining to its collection number in the catalogue, which was added for those birds that survived World War II, suggests that the specimen was probably destroyed at this time, like much of the Dresden collection (Roselaar 2003).

The collection of Alfred Malherbe (1804–66) was subsequently acquired by Count Turati, whose own collection was incorporated into the Museo Civico di Storia Naturale, Milan (MSNM) in 1884 (Roselaar 2003). Although MSNM also suffered great damage and specimen loss in World War II, Malherbe's pair of Imperial Woodpeckers, acquired by Turati in 1860, survived and information concerning them was summarised by Violani *et al.* (1984), who also provided a photograph of the male. The male of the mounted pair is MSNM Av 31059 (ex coll. Turati no. 4385) and the female MSNM Av 27993 (ex coll. Turati no. 4386), but the only other information noted is their origin, 'California'. Any of these early specimens discussed in this and the preceding two paragraphs might conceivably have had a link to Gould, but evidence is lacking.

Overall, six specimens have strong claims to be considered syntypes of the name *Picus imperialis*: BMNH 1838.5.12.108 (male—also registered as 1988.21.6), 1855.12.19.325 (female), 1888.8.5.60 (female) and 1888.8.5.61 (male); and LM D3868 (male) and LM D3868a (female). All of these appear to have been part of Gould's original series and no information is available to demonstrate that his description was based only on a subset of them.

**Acknowledgments**

I am extremely grateful to Giorgio Chiozzi, Kevin Clark, Ann Datta, Clemency Fisher, Gary Graves, Maureen Lambourne, Mary LeCroy, Adolfo Navarro, Bernd Nicolai, Nate Rice, Douglas Russell, Frank Steinheimer, Till Töpfer and Claire Voisin for information and other assistance during the preparation of this paper.

References:

Anon. (= Sclater, P. L.) 1892 The bird-gallery in the British Museum. *Ibis* (6)4: 185–186.

Cabanis, J. L. 1863 *Museum Heineanum*, vol. 4(2). Halberstadt.

Coues, E. 1879. Third instalment of American ornithological bibliography. *Bull. US Geol. Geog. Survey Territ.* 5: 521–1066.

Gill, F. B. 1995. Philadelphia: 180 years of ornithology at the Academy of Natural Sciences. *Mem. Nuttall Orn. Cl.* 12: 1–31.

Gould, J. 1832. [Specimens were exhibited of a species of woodpecker, … ] *Proc. Comm. Sci. Corresp. Zool. Soc. Lond.* 2: 139–140.

Gould, J. 1856. On a new turkey, *Meleagris mexicana*. *Proc. Zool. Soc. Lond.* 24: 61–63.

Gould, J. 1861. *A monograph of the Trochilidae, or family of humming-birds*, 5 vols. Privately published, London.

Gould, J. 1875. *A monograph of the Trogonidae, or family of trogons*. Second edn. Privately published, London.

Gray, G. R. 1868. *List of the specimens of birds in the collection of the British Museum. Part III. Sections III & IV. Capitonidae and Picidae*. Trustees of the Brit. Mus., London.

Hargitt, E. 1890. *Catalogue of the birds in the British Museum*, vol. 18. Trustees of the Brit. Mus., London.

Knox, A. G. & Walters, M. P. 1994. *Extinct and endangered birds in the collections of the Natural History Museum*. British Ornithologists' Club Occ. Publ. 1.

Lambourne, M. 1987. *John Gould – bird man*. Osberton Productions, Milton Keynes.

Malherbe, A. 1861. *Monographie des Picidées*, vol. 1. La Societé d'Histoire naturelle de la Moselle, Metz.

Nelson, E. W. 1898. The Imperial Ivory-billed Woodpecker, *Campephilus imperialis* (Gould). *Auk* 15: 217–223.

Palmer, T. S. 1928. Notes on persons whose names appear in the nomenclature of California birds. *Condor* 30: 261–307.

Roselaar, C. S. 2003. An inventory of major European bird collections. *Bull. Brit. Orn. Cl.* 123A: 253–337.

Salvin, O. & Godman, F. D. 1888–97. *Biologia Centrali-Americana. Aves*, vol. 2. Taylor & Francis, London.

Sauer, G. C. 1998. *John Gould the bird man: correspondence, with a chronology of his life and works*, vol. 1. Maurizio Martino, Mansfield Centre, CT & Natural History Museum, London.

Sauer, G. C. 2006. *John Gould the bird man: correspondence, with a chronology of his life and works*, vol. 5. Maurizio Martino, Mansfield Centre, CT.

Sharpe, R. B. 1906. Birds. Pp. 79–515 *in The history of the collections contained in the Natural History Departments of the British Museum*, vol. 2. Trustees of the Brit. Mus., London.

Snyder, N. F. R., Brown, D. E. & Clark, K. B. 2009. *The travails of two woodpeckers: ivory-bills & imperials*. Univ. of New Mexico Press, Albuquerque.

Todd, A. C. 1977. *The search for silver: Cornish miners in Mexico, 1824–1947*. Lodenek Press, Padstow.

Violani, C., Daturi, A. & Cagnolaro, L. 1984. Uccelli estinti e rari nei Musei naturalistici do Milano, Genova e Firenze. *Riv. Ital. Orn.* 54: 105–178.

Wagstaffe, R. 1978. *Type specimens of birds in the Merseyside County Museums*. Merseyside County Museums, Liverpool.

Warren, R. L. M. 1966. *Type-specimens of birds in the British Museum (Natural History)*, vol. 1. Trustees of the Brit. Mus. (Nat. Hist.), London.

Wheeler, A. 1997. Zoological collections in the early British Museum: the Zoological Society's Museum. *Arch. Nat. Hist.* 24: 89–126.

*Address*: Bird Group, Natural History Museum, Akeman Street, Tring, Herts. HP23 6AP, UK, e-mail: r.prys-jones@nhm.ac.uk

© British Ornithologists' Club 2011

# Range extensions and other noteworthy bird records from the Ecuadorian Andes

*by Elisa Bonaccorso, Diana Arzuza, Galo Buitrón-Jurado, Ana Lucía Charpentier, Mery Juiña, Paolo Piedrahía & Juan F. Freile*

*Received 21 June 2011*

Summary.—We present the results of nine ornithological expeditions aimed at documenting bird diversity in areas of Ecuador that remain relatively under-explored. The majority of new records were made along the western Andes, either in the central or the southern extensions of the outer slope, suggesting that several species may have more continuous distributions than previously thought. Among the most interesting records are those of Collared Inca *Coeligena torquata* in western Azuay, Tricoloured Brush Finch *Atlapetes tricolor* in the Cerro de Celica-Guachanamá, in Loja, and White-browed Spinetail *Hellmayrea gularis* and Bluish Flowerpiercer *Diglossa caerulescens* in the Cordillera de Chilla, in El Oro. These new records in the south-west of the country suggest that extensive sampling is still needed in this region. We also report new altitudinal records for several species and suggest that they may represent range extensions rather than occasional records.

Among South American countries, Ecuador is one of the better studied in terms of its avifauna (Winker 1998). Nevertheless, several species and areas of the country remain poorly known, yet represent important priorities for research and conservation (Freile *et al.* 2006). Species distributions and biogeographic patterns are not well understood (Krabbe 2008), despite that a major compendium on the country's birds was published within the last decade (Ridgely & Greenfield 2001). Nevertheless, new records and range extensions are published regularly (e.g. Freile 2004, Cisneros-Heredia 2006, Solano-Ugalde *et al.* 2007) and continuous publication of such data is needed to understand the present, past and possible future biogeographic patterns across the country and the Neotropics. Herein, we present the results of nine ornithological expeditions aimed at documenting avian diversity in areas of Ecuador that remain relatively under-explored.

## Materials and Methods

Ornithological field work was carried out in February–December 2009 throughout the Ecuadorian Andes at 1,700–3,400 m. Sites surveyed included tracts of pristine or secondary montane forests. All specimens were collected using mist-nets and prepared as study skins, and are deposited at the Museo de Zoología (QCAZ), Pontificia Universidad Católica del Ecuador, in Quito. Previous knowledge of geographic distributions is based on Ridgely & Greenfield (2001), but taxonomy, species sequence and vernacular names follow Remsen *et al.* (2011). Locality information is provided in Table 1 and Fig. 1.

## Species accounts

**COLLARED INCA** *Coeligena torquata*

Four specimens (QCAZ 3848, 3865, 3886, 4203) collected at the río Chipla, Cruzpamba, prov. Azuay, in secondary forest, on 13–17 January 2009, corresponded to *C. t. fulgidigula*, which

TABLE 1
Localities from where range extensions are reported (Fig. 1).

| Locality | Coordinates | Altitude |
|---|---|---|
| Cordillera de Toisán, San Antonio de Cuellaje, Imbabura | 00°29'39"N, 78°33'57"W | 2,657 m |
| Bosque Protector Peñas Blancas, Salinas, Bolívar | 01°25'53.00"S, 79°05'52.00"W | 2,637 m |
| Reserva Ankaku, Pastaza | 01°16'3.2"S, 78°02'52.4"W | 1,679 m |
| Laguna Culebrillas, Parque Nacional Sangay, Cañar | 02°25'35.60"S, 78°52'11.90"W | 3,971 m |
| Río Chipla, Cruzpampa, Azuay | 02°44'44.59"S, 79°24'32.11"W | 2,464 m |
| Cordillera de Chilla, El Oro | 03°30'11.41"S, 79°37'18.80"W | 3,193 m |
| Huajalá, Loja | 04°06'9.828"S, 79°58'46.704"W | 2,100 m |
| Guachahurco, Parroquia Guachanamá, Loja | 04°01'58.58"S, 79°52'11.06"W | 3,102 m |

also occurs elsewhere on the west slope of the Andes. Although this species is found on both slopes of the Andes, on the west slope it had been reported (at least historically) south only to western Chimborazo (Ridgely & Greenfield 2001), with a recent report from western Bolívar (Freile 2004). Our specimens extend the known distribution on the west slope south to western Azuay. Given that no obvious geographic barrier exists immediately south of this region, the species' range might continue south to the Pucará area, just north of the río Jubones.

**GORGETED SUNANGEL** *Heliangelus strophianus*
A specimen (QCAZ 3509) from Bosque Protector Peñas Blancas, Salinas, prov. Bolívar, taken on 27 May 2009, in a forest fragment with bamboo patches and shrubs, was captured at a forest edge with several shrubs where other individuals were observed visiting Ericaceae

Figure 1. Map of Ecuador showing our study sites.

flowers. It is found along the west slope of the Andes, continuously through Carchi to Pichincha, with scattered records from Cotopaxi south to El Oro (Ridgely & Greenfield 2001). Ours is the first specimen from Bolívar. Whether the species has a continuous distribution along the west slope of the Andes of Ecuador requires elucidation.

**GREENISH PUFFLEG** *Haplophaedia aureliae*
Two specimens (QCAZ 3802, 4204) collected at Reserva Ankaku, in mature forest, on 16 and 18 October 2009 were of the subspecies *H. a. russata*. Greenish Puffleg is patchily distributed on the east slope of the Andes, but seems more abundant on isolated ridges, such as Volcán Sumaco, the Cordillera del Condor, Cordillera del Cutucú and Cordillera de los Guacamayos (Ridgely & Greenfield 2001). Our record from near the Cordillera de los Llanganates confirms its presence in Pastaza from where there were no published records.

**WHITE-BROWED SPINETAIL** *Hellmayrea gularis*
A specimen (QCAZ 3706) was taken in secondary scrub forest at the Cordillera de Chilla, prov. El Oro, on 18 August 2009. The species occurs on both slopes of the Andes; in the west it has been recorded south to Azuay (Ridgely & Greenfield 2001). Our specimen extends the known distribution south of the río Jubones, into the mountains of Chilla. As noted before, this isolated range merits further research to elucidate bird distribution patterns and to understand the role of the río Jubones as a barrier to species distributions (Krabbe 2008).

**STREAK-BACKED CANASTERO** *Asthenes wyatti*
Three specimens (QCAZ 3874, 3940, 3976) were collected in grassy páramo at Laguna Culebrillas, Parque Nacional Sangay, prov. Cañar, on 4–5 December 2009. They corresponded to *A. w. aequatorialis* and are the southernmost specimens of this taxon. Krabbe (2000) reported a population of *A. w. aequatorialis* as far south as the Cajas plateau, but no specimens have been collected there. The other subspecies in Ecuador, *A. w. azuay*, was recently rediscovered by Krabbe (2000) and has been reported as far north as the Altiplano of Tarqui in southern Azuay (03°22'S, 79°11'W). Whether these two forms are geographically isolated or if their plumage differences represent clinal variation is unclear. Although their vocalisations are identical (Krabbe 2000), this might merely reflect recent geographic isolation.

**FLAMMULATED TREEHUNTER** *Thripadectes flammulatus*
Two specimens (QCAZ 3585, 3587) were collected at Bosque Protector Peñas Blancas, Salinas, prov. Bolívar, in secondary forest, on 27 and 29 May 2009. Uncommon on both outer slopes of the Andes, and very local above the inter-Andean valley. On the west slope the species has been recorded south to Azuay, at Sural and Portete (Ridgely & Greenfield 2001). Our specimens and prior observations from Salinas (Poulsen & Krabbe 1998) confirm the species' presence in Bolívar.

**SLATY-BLACKED CHAT-TYRANT** *Ochthoeca cinnamomeiventris*
Two specimens (QCAZ 3825, 3967) collected in secondary forest at the río Chipla, Cruzpampa, prov. Azuay, on 19 January 2010. Occurs on both slopes of the Andes, but on the west slope it is known to occur south only to Chimborazo (Ridgely & Greenfield 2001). Our specimens extend its southernmost limit to western Azuay, on the Cajas plateau, partially supporting the suggestion of Krabbe *et al.* (1998), who also found the species at Mazán on the east slope of the same plateau (N. Krabbe pers. comm.).

**YELLOW-BELLIED CHAT-TYRANT** *Ochthoeca diadema*
Four specimens (QCAZ 3550, 3522, 3943, 4206) collected at Bosque Protector Peñas Blancas, Salinas, prov. Bolívar, in secondary forest, on 27 May 2009. Found on both slopes of the Andes, but in the west it has been recorded only as far south as Cotopaxi and locally to western Azuay, at Sural (Ridgely & Greenfield 2001). Our specimens confirm a previous sight record from Bolívar, at Tiquibuzo (Freile 2004).

**SLATY THRUSH** *Turdus nigriceps*
A male (QCAZ 3873) collected near the canopy of a cloud forest at Huajalá, prov. Loja, on 26 February 2009, possessed significant fat but its age was not determined. Known to breed locally in Loja, but available evidence suggests that the species vacates this region during the second half of the year (Ridgely & Greenfield 2001).

**BLUISH FLOWERPIERCER** *Diglossa caerulescens*
A specimen (QCAZ 3707) was collected at the Cordillera de Chilla, prov. El Oro, in upper montane forest (3,193 m), on 18 August 2009. The site comprised secondary forest with scattered Spanish Cedar *Cedrela montana* and *Erythrina* spp. trees. The species is known from the west Andes south to Pichincha, with scattered records further south (Ridgely & Greenfield 2001). Two specimens deposited at the Academy of Natural Sciences Philadelphia collected at Portete (Azuay), and our record from Chilla, suggest this species might be more widespread in south-west Ecuador. Subspecific identification is difficult because differences from specimens taken on the east slope are subtle (i.e., plumage slightly duller overall in the east). Plumage variation in *D. caerulescens* appears complex, even within east slope populations (Ridgely & Greenfield 2001), and there are two apparently undescribed subspecies, in the north-west (south to Pichincha) and the Cordillera del Cutucú (Fjeldså & Krabbe 1990).

**BLACK-CAPPED TANAGER** *Tangara heinei*
A specimen (QCAZ 3299) was collected at Chilmá Bajo, 57 km west of Tufiño on the road to Chical, prov. Carchi, on 24 February 2009. The site was characterised by secondary forest with scattered Spanish Cedar *Cedrela montana* and *Erythrina* sp. trees. On the west slope of the Andes, *T. heinei* has been found locally at Pichincha (in the Tandayapa–Nanegal region) and more recently in southern Imbabura, east of Apuela (Ridgely & Greenfield 2001, Freile 2004). Our specimen represents the northernmost record on the west slope, and comes from an area close to the Colombian border.

**TRICOLOURED BRUSH FINCH** *Atlapetes tricolor*
A specimen (QCAZ 3843) was collected at Guachahurco, Parroquia Guachanamá, prov. Loja, in shrubby forest, on 23 February 2010. Widespread and fairly common on the west slope of the Andes, from Esmeraldas south to Pichincha and west Cotopaxi, it has also been recorded at a few localities in Azuay and El Oro (Ridgely & Greenfield 2001). Our specimen indicates the species' presence in the Cerro de Celica-Guachanamá of Loja and also provides a new upper altitudinal limit, at 3,102 m; it was previously recorded to 2,300–2,400 m, in Cotopaxi (Ridgely & Greenfield 2001). Comparison with material at QCAZ revealed that our specimen corresponds to *A. tricolor*, and not to *A. latinuchus*, which normally replaces the first-named species at higher elevations and has been recorded at 1,800–2,800 m in these mountains (N. Krabbe pers. comm.).

## Altitudinal records

We recorded several species outside their usual altitudinal range, as follows. **Toucan Barbet** *Semnornis ramphastinus* (QCAZ 3610), at 2,657 m, in the Cordillera de Toisán (Imbabura), on 19 January 2009; mostly recorded at 1,400–2,400 m. **Bar-bellied Woodpecker** *Veniliornis nigriceps* (QCAZ 3824) at 2,464 m, at the río Chipla, Cruzpampa (Azuay), on 18 January 2010; previous lowest records 2,800 m. **Red-faced Spinetail** *Cranioleuca erythrops* (QCAZ 3941) at 2,050 m, at Chilmá Bajo (Carchi), on 22 February 2009; previous highest record 1,900 m. **Scaled Antpitta** *Grallaria guatimalensis* (QCAZ 4205) at 1,679 m, in Reserva Ankaku (Pastaza), on 16 October 2009; recorded mainly below 1,300 m in the eastern foothills. **Jelski's Chat-Tyrant** *Ochthoeca jelskii* (QCAZ 3840, 3845) at 3,102 m, in Guachahurco (Loja), on 23 February 2010; previously recorded mostly to 2,800 m. **Southern Rough-winged Swallow** *Stelgidopteryx ruficollis* (QCAZ 3942) at 2,056 m, at Chilmá Bajo, (Carchi), on 25 February 2009; previously reported below 1,800 m. **Masked Flowerpiercer** *Diglossa cyanea* (QCAZ 3540–41), at 2,056 m, at Chilmá Bajo (Carchi), on 23–25 February 2009; recorded mainly at 2,400–3,500 m in northern Ecuador.

Given that continuous habitat exists between these records and the species' usual altitudinal ranges we believe that the above-mentioned records could represent 'real' altitudinal range extensions, at least locally, rather than occasional records.

**Acknowledgements**

We are grateful to Daniela Bahamonde and Héctor Cadena for their assistance with the preparation of study skins, María Dolores Guarderas for coordinating the field trips, Eduardo Toral for facilitating field work at Cordillera de Toisán, and Esteban Guevara and our local assistants for their help during the expeditions. Christian Devenish, Niels Krabbe and Paul Greenfield made valuable comments on this manuscript. The Ministerio del Ambiente del Ecuador authorised our countrywide inventory (permit no. 008-09 IC-FAU-DNB/MA) and the Pontificia Universidad Católica del Ecuador granted access to its collections. Funding for this work was provided by the Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación of Ecuador (PI-C08-0000470).

References:

Cisneros-Heredia, D. F. 2006. Notes on breeding, behaviour and distribution of some birds in Ecuador. *Bull. Brit. Orn. Cl.* 126: 153–164.

Fjeldså, J. & Krabbe, N. 1990. *Birds of the high Andes*. Zool. Mus., Univ. of Copenhagen & Apollo Books, Svendborg.

Freile, J. F. 2004. Range extensions and other noteworthy bird records from mainland Ecuador. *Bull. Brit. Orn. Cl.* 124: 188–202.

Freile, J. F., Carrión, J. M., Prieto-Albuja, P., Suárez, L. & Ortiz-Crespo, F. 2006. La ornitología en Ecuador: un análisis del estado actual y sugerencias para prioridades de investigación. *Orn. Neotrop.* 17: 183–202.

Krabbe, N. 2000. Rediscovery of *Asthenes wyatti azuay* (Chapman 1923) with notes on its plumage variation and taxonomy of the *Asthenes anthoides* species. *Bull. Brit. Orn. Cl.* 120: 149–153.

Krabbe, N. 2008. Arid valleys as dispersal barriers to high-Andean forest birds in Ecuador. *Cotinga* 29: 28–30.

Ridgely, R. S. & Greenfield, P. J. 2001. *The birds of Ecuador*. Cornell Univ. Press, Ithaca, NY.

Poulsen, O. B. & Krabbe, N. 1998. Avifaunal diversity of five high-altitude cloud forests on the Andean western slope of Ecuador: testing a rapid assessment method. *J. Biogeogr.* 25: 83–93.

Solano-Ugalde, A., Pérez, V. & Ahlman, R. 2007. Primeros registros de la Reinita Gorrinegra (*Wilsonia pusilla*) en Ecuador. *Bol. Soc. Antioqueña Orn.* 17: 59–62.

Remsen, J. V., Cadena, C. D., Jaramillo, A., Nores, M., Pacheco, J. F., Robbins, M. B., Schulenberg, T. S., Stiles, F. G., Stotz, D. F. & Zimmer, K. J. 2011. A classification of the bird species of South America. www.museum.lsu.edu/~Remsen/SACCBaseline.html.

Winker, K. 1998. Recent geographic trends in Neotropical avian research. *Condor* 100: 764–768.

*Addresses*: Elisa Bonaccorso, Centro de Investigación en Biodiversidad y el Cambio Climático, Universidad Tecnológica Indoamérica, Machala y Sabanilla, Quito, Ecuador, e-mail: elisabonaccorso@gmail.com. Diana Arzuza, Galo Buitrón-Jurado, Ana Lucía Charpentier, Mery Juiña & Paolo Piedrahita, Pontificia Universidad Católica del Ecuador, Av. 12 de Octubre 1076 y Roca, Quito, Ecuador. Juan F. Freile, Fundación Numashir, C.P. 17-12-122, Quito, Ecuador, e-mail: jfreileo@yahoo.com

© British Ornithologists' Club 2011

# On the breeding biology of Yellowish Flycatcher *Empidonax flavescens* in Costa Rica

*by Manuel Marín*

*Received 25 June 2011*

Summary.—I report data on the breeding biology of Yellowish Flycatcher *Empidonax flavescens* from the highlands of central Costa Rica. Nesting coincided with the early part of the rainy season. Nests were cup-shaped and constructed of fine grasses, while the outer part was a bulky structure mainly built from mosses. Clutch size was 2–3 eggs and incubation period was 16–17 days. The birds had at least two broods per season and, in some cases, perhaps three broods. The nestling period lasted 15–16 days. Nesting success was very high (81%) which is unusual for a small passerine that constructs an open cup nest.

Yellowish Flycatcher *Empidonax flavescens* is a small tyrannid that is widespread in subtropical and temperate zones from southern Mexico to western Panama (AOU 1998). In Costa Rica it is a common resident on both slopes at *c*.600–2,400 m (Stiles & Skutch 1989), and in the centre of the country the species is found particularly around edges, open woodland and along rivers. Although some notes on its behaviour and breeding biology, based on one nest in Guatemala and three nests in Costa Rica, were reported by Skutch (1967), nothing has been published concerning incubation and growth rates. Large quantities of data are available concerning growth rate patterns for many temperate species, but limited comparative data are available for tropical taxa (Ricklefs 1968, Starck & Ricklefs 1998). Here I report data on growth rates and additional data on the species' breeding biology from observations made in central Costa Rica.

## Study site and Methods

Data for this study were gathered in Costa Rica, in the río Tiribí area, prov. San José (1,900–2,100 m) at 09°57'N 83°55'W. Observations were made primarily in the river canyon, but also in adjacent areas. The site was described in detail by Marín & Stiles (1992) and it was visited in June–August 1995 and May–August 1996–97, with additional observations in June–August 1984–85 and February–September 1986. Visits were made to nests during the incubation and nestling periods at 1–5-day intervals. Body mass was recorded using AVINET spring balances (± 0.1 g) of 10 and or 30 g capacity, depending on nestling age. Culmen length was taken to the nearest 0.1 mm using dial calipers, and wing length (flattened) and tail length using a standard wing rule, following the techniques described by Baldwin *et al.* (1931). All measurements were recorded prior to 12.00 h. To facilitate individual recognition, nestlings were initially marked using coloured thread and then banded with a numbered plastic band.

Egg measurements (Table 1) are based on museum specimens deposited at the Western Foundation of Vertebrate Zoology (WFVZ) and field measurements from the study area. Eggs were measured to the nearest 0.01 mm using digital calipers. Mean egg mass was calculated from museum specimens at WFVZ, using the formula ($M=k.L.B^2$), where L = length, B = breath and *k* was calculated by regression using fresh egg mass (Hoyt 1979). Egg shapes follow Preston (*in* Palmer 1962). The incubation period was taken from the laying of the first egg to the hatching of the first egg. The hatching date is recorded age zero on

TABLE 1
Dimensions and mass of Yellowish Flycatcher *Empidonax flavescens* eggs (*n*=25).

| Parameter | Mean | SD | Range |
|---|---|---|---|
| Length (mm) | 17.84 | 0.766 | 16.48–19.39 |
| Width (mm) | 13.91 | 0.362 | 13.20–14.78 |
| Mass[a] (g) | 1.93 | – | 1.7–2.1[b] |

[a] Calculated from mean egg measurements; see Methods.
[b] Calculated mass from the smallest and largest egg.

the graphs. Adult measurements and body mass were taken from mist-netted birds and specimens at WFVZ, all from the study area. The time for nestlings to grow 10–90% of their body mass (the $T_{(10-90)}$ period; Case 1978) and the growth rate constant *K* (Ricklefs 1976) were determined using methods outlined by these authors.

## Results and Discussion

*Breeding seasonality.*—The rainy season in central Costa Rica starts in April and ends in December, with two rainfall peaks, in May–June and in September–October, and less wet periods in June and August (Marín & Stiles 1992). Nests were found from mid April to mid July, with most being documented in May–June (83%; *n*=18) during the early wet season. Post mid July, between the peaks of the rainy season, the species was not observed at the study site. Although Skutch (1967) indicated that the season started not earlier than March (he reported fledged young by late April), within the study area the earliest recorded date for fresh eggs was 14 April. The breeding season in the study area coincided with Skutch's (1950) general findings in Costa Rica that at high altitudes nests are concentrated in April–June. Skutch (1950) indicated that food is most abundant during this period, which coincides also with the main breeding season in the country for many other bird species.

Although individual females were not marked, evidence suggests that this flycatcher may produce more than two broods per season. At most nests, after fledging of the first brood, a second nest was constructed in close proximity, adjacent or atop the old nest, and on three occasions a third nest was built post fledging of the second brood.

*Nest, eggs and incubation.*—The nest was well described by Skutch (1967) as 'bulky masses of green moss, or of mosses and liverworts, interlaced with a few fibrous rootlets, horsehair, or similar binding materials.' All of the observed nests were cup-shaped and built of mosses and liverworts, and the cup was lined with very fine and soft dry grasses (Fig. 1A–B). All nests observed or collected (*n*=27) were constructed on embankments, 24 over running water and three on road embankments. For ten nests the height above the water or ground level was 1.0–3.2 m (mean 1.9 m).

Eggs were creamy white with reddish-brown blotches and spots mostly towards the larger end. Most had a well-defined wreath and some were 'capped' (Fig. 1B). Clutch size was 2–3 eggs. Of 27 nests from field or museum specimens, ten clutches comprised two eggs and 17 had three eggs. For four nests Skutch (1967) found that three nests had three eggs and one nest two eggs. Shape ranged mainly from short-subelliptical (69%) to subelliptical (27%) but some were oval (4%) (*n*=26). For measurements see Table 1. Incubation period at four nests was 16–17 days, which is longer than in more temperate congeners (Fitzpatrick 2004). Of 21 eggs from nine nests followed in more detail, 17 nestlings (81%) fledged successfully, three failed to hatch and one nestling was found dead at an early age. This

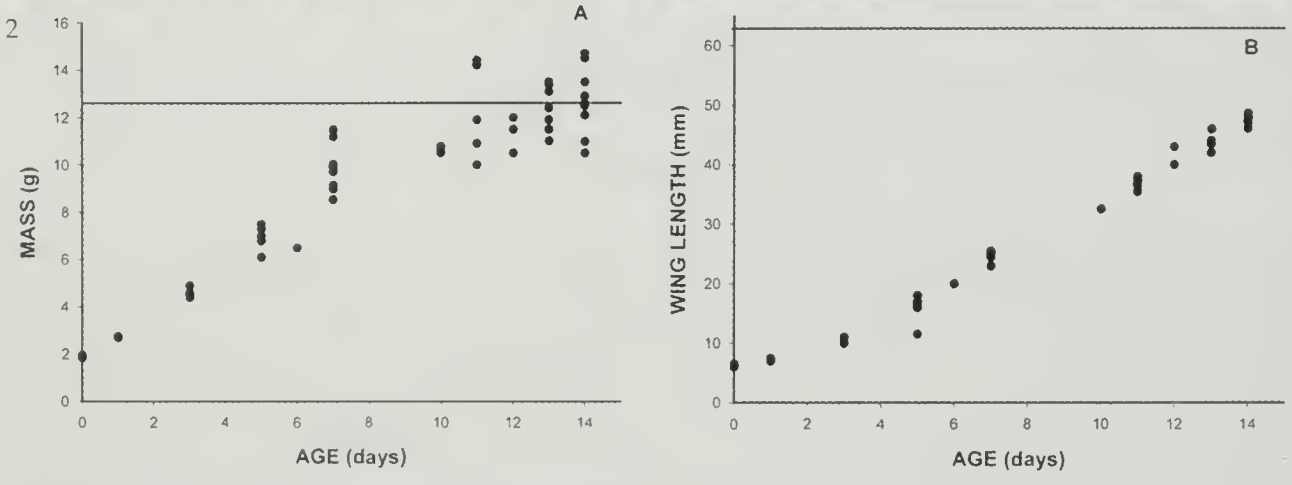


Figure 1A. Adult Yellowish Flycatcher *Empidonax flavescens* on the nest, and (B) nest and eggs of Yellowish Flycatcher (Manuel Marín)

Figure 2A–C. Growth curves for three parameters from 18 nestlings of Yellowish Flycatcher *Empidonax flavescens* in Costa Rica. The solid horizontal line represents the mean size of adults (see text).

rate of productivity is relatively high for a small tropical passerine that builds an open-cup nest (Skutch 1976).

*Nestling development.*—I followed the full development of seven nestlings, from three nests, from hatching through fledgling and 11 nestlings from four nests, with partial data ranging from one to four measurements per nestling. The nestlings hatched almost completely naked, with a few buff-coloured down feathers on the back and head. The body was yellowish orange, with the gape flanges bright yellow and the gape yellowish orange. The bill was yellowish with a grey tone to the tip and the claws were orange-yellow.

Hatching mass was 1.9 g (15% of adult size; adult mass [sexes combined] was 12.6 g ± 0.47; $n$=4). Maximum mass in nestlings was reached just prior to fledging. The maximum mass reached by nestlings from a brood size of two was 14.7 g (116% of adult size) but in a brood of three was 13.5 g (107% adult size), i.e. 8.1% difference (Fig 2A). The overall $T_{10-90}$ was 9.7 days and $K$ was 0.453. I have no comparable data from the tropics, but in Pacific-slope Flycatcher *Empidonax difficilis*, a temperate breeding species with a larger clutch size (up to five eggs) and of similar mass (9–12 g) these values are 10.1 days and $K$=0.436 (Ricklefs 1968, Fitzpatrick 2004), i.e. slightly slower than Yellowish Flycatcher. The larger

(15 g) Willow Flycatcher *E. traillii* has a faster growth with values of 9.3 days and $K$=0.472 (Ricklefs 1968). No clear pattern to its development exists because (a) Yellowish Flycatcher contrasts with the general trend that tropical birds develop slower than temperate species, but (b) it is in accordance with overall trends that smaller species develop faster (Ricklefs 1968, 1983).

Maximum wing length prior to fledging was 48.5 mm, 77% of adult size (63.2 mm ± 2.36; $n$=7: Fig. 2B) and the tail reached a maximum of 20 mm, 40.1% adult size (49.8 mm ± 1.86; $n$=7) (Fig. 2C). Tarsus length by age 11 days was adult size (16.2 mm ± 0.69; $n$=7) and culmen length reached a max. 74.5% of adult size at fledging (adult size 10.2 mm ± 0.11; $n$=7).

The eyes were closed on hatching and about half-open by days 5–6. By age 5–7 days buffy down was dominant on the head and back, and pin feathers on the wings were close to bare sheath. On days 5–6 the yellowish feathers on the chest and body-sides were ready to sprout and they broke sheath on days 7–8. By age 9–10 days the rectrices had broken sheath. By days 11–12 the young were very active and were apt to jump from the nest when approached. Nestlings fledged at age 15–16 days, but in one nest Skutch (1967) found that the nestlings remained 17 days.

**Acknowledgements**

I thank J. Babin, R. Corado and A. Jackson for field assistance in Costa Rica. Permits to work in Costa Rica were provided by the Ministerio de Recursos Naturales Energia y Minas, and I am very grateful to Licenciado Javier Guevara and J. Sanchez who facilitated these. The data presented here were gathered peripheral to other ecological studies and field work was supported by the Chapman Fund of the American Museum of Natural History, New York, the National Geographic Society (Grants NGS # 5680-96 and 5870-97) and the Western Foundation of Vertebrate Zoology. This paper benefited greatly by comments by D. A. Oehler, and the referee, Harold Greeney.

References:

American Ornithologists' Union. 1998. *Check-list of North American birds*. Seventh edn. American Ornithologists' Union, Washington DC.

Baldwin, S. P., Oberholser, H. C. & Worley, L. G. 1931. Measurements of birds. *Sci. Publ. Cleveland Mus. Nat. Hist.* 2: 1–165.

Case, T. J. 1978. On the evolution and adaptative significance of postnatal growth rates in terrestrial vertebrates. *Quarterly Rev. Biol.* 55: 243–282.

Fitzpatrick, J. W. 2004. Family Tyrannidae (tyrant-flycatchers). Pp. 170–462 *in* del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 9. Lynx Edicions, Barcelona.

Hoyt, D. F. 1979. Practical methods of estimating volume and fresh weight of birds eggs. *Auk* 96: 73–77.

Marín, M. & Stiles, F. G. 1992. On the biology of five species of swifts (Apodidae, Cypseloidinae) in Costa Rica. *Proc. West. Found. Vert. Zool.* 4: 287–351.

Palmer, R. S. 1962. *Handbook of North American birds*, vol. 1. Yale Univ. Press, New Haven, CT.

Ricklefs, R. E. 1968. Patterns of growth in birds. *Ibis* 110: 419–451.

Ricklefs, R. E. 1976. Growth rates of birds in the humid New World tropics. *Ibis* 118: 179–207.

Ricklefs, R. E. 1983. Avian postnatal development. Pp. 1–83 *in* Farner, D. S., King, J. R. & Parkes, K. C. (eds.) *Avian biology*, vol. 7. Academic Press, New York & London.

Skutch, A. F. 1950. The nesting seasons of Central American birds in relation to climate and food supply. *Ibis* 92: 185–222.

Skutch, A. F. 1967. *Life histories of Central American highland birds*. Publ. Nuttall Orn. Cl. 7. Nuttall Orn. Cl., Cambridge, MA.

Skutch, A, F. 1976. *Parent birds and their young*. Univ. of Texas Press, Austin.

Starck, J. M. & Ricklefs, R. E. 1998. Avian growth rate data set. Pp. 381–423 *in* Starck, J. M. & Ricklefs, R. E. (eds.) *Avian growth and development, evolution within the altricial-precocial spectrum*. Oxford Univ. Press, New York.

Stiles, F. G. & Skutch, A. F. 1989. *A guide to the birds of Costa Rica*. Cornell Univ. Press, Ithaca, N.Y.

*Address*: Museum of Natural Science, 119 Foster Hall, Louisiana State University, Baton Rouge, Louisiana 70803, USA. Present address: Casilla 15 Melipilla, Chile, e-mail: mma95@hotmail.com

© British Ornithologists' Club 2011

# A new taxon in the Mourning Wheatear *Oenanthe lugens* complex

*by Hadoram Shirihai, Guy M. Kirwan & Andreas J. Helbig*†

*Received 3 July 2011*

Summary.—We describe a new taxon in the Mourning Wheatear *Oenanthe lugens* complex, from the basalt desert of eastern Jordan and southern Syria. This population has been almost universally considered to represent a melanistic colour morph of nominate *O. lugens*, but it also differs from any other member of the complex in lacking rufous undertail-coverts. It further differs from *O. l. lugens* in rump pattern and morphometrics. 'Morph' status is inappropriate, because the population is geographically restricted, whereas colour morphs are typically evident throughout the distributional range of a taxon. Suggestions that mixed pairings of pale- and black-morph birds occur are refuted by recent evidence. The new taxon has the wing formula and white wing panel of the *lugens* complex, but is closest in these respects to *O. l. persica*, whereas the largely black plumage makes it virtually identical to male Variable Wheatears *O. picata opistholeuca*. Because mtDNA analysis suggests that the new taxon is inseparable from *O. l. lugens*, we describe it at subspecies level. Remarks concerning distribution and conservation are presented, along with considerations for future research.

The Mourning Wheatear *Oenanthe lugens* complex has traditionally been considered to comprise eight, mainly sedentary subspecies (Ripley 1964, Collar 2005), as follows: (1) *O. l. lugens* (M. H. C. Lichtenstein, 1823) in the Levant south to north-west Saudi Arabia, eastern Egypt and north-east Sudan; (2) *O. l. halophila* (Tristram, 1859) in North Africa roughly from Libya as far as Morocco; (3) *O. l. persica* (Seebohm, 1881) in southern and western Iran, wintering mostly in eastern Arabia; (4) *O. l. lugentoides* (Seebohm, 1881) in the highlands of south-west Saudi Arabia and western Yemen; (5) *O. l. boscaweni* G. L. Bates, 1937, in north-east Yemen and southern Oman; (6) *O. l. lugubris* (Rüppell, 1837) in the highlands of Eritrea and north and central Ethiopia, (7) *O. l. vauriei* R. Meinertzhagen, 1949, in north-east Somalia; and *O. l. schalowi* (G. A. Fischer & Reichenow, 1884), in southern Kenya and north-east Tanzania, at the southern limits of the complex.

These taxa fall into three or four groups, some of which are increasingly separated as species (e.g., Porter *et al.* 1996, Panov 2005, Svensson *et al.* 2009, Jennings 2010), namely *O. lugens* (including *halophila* and *persica*; Mourning Wheatear, with the former sometimes separated as Maghreb Wheatear *O. halophila*), *O. lugentoides* (including *boscaweni*; South Arabian Wheatear), *O. lugubris* (including *vauriei*; Abyssinian Black Wheatear) and *O. schalowi* (Schalow's Wheatear), with the latter two frequently 'lumped'. Some authors have gone further. For example, Porter & Aspinall (2010) recognised *O. l. lugens* and *O. l. persica* at species level, under the vernacular name Eastern Mourning Wheatear, but Förschler *et al.* (2010) published molecular data to support splitting *persica* off from *lugens*. The latter study, the only published genetic data to date, recommended treating four species-level groupings, *O. lugens*, *O. persica*, *O. lugentoides* and *O. lugubris*. Nonetheless, some authorities have maintained a single species (e.g., Collar 2005), whilst others recognise only a two-way split (Zimmerman *et al.* 1996, Dickinson 2003) between those forms in North Africa and the Middle East, and those in East Africa.

One unresolved issue is the status of the population inhabiting the basalt deserts of north-east Jordan and southern Syria, as well as perhaps adjacent north-west Saudi Arabia

Figures 1–2. First-summer male Basalt Wheatear *Oenanthe lugens warriae*, showing the nearly all-black plumage, with white undertail-coverts, small white rump patch and basal tail feathers, between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai); aged and sexed by combination of juvenile-retained remiges and primary-coverts (only tiny white spots remain on their tips due to wear, but these are still diagnostic), and highly glossed black plumage.

3

4

5

(see Tye 1994, Jennings 2010), which has been more or less universally treated as a black 'morph' of nominate *lugens*. Although two specimens (both in the Natural History Museum, Tring) have been available for many decades, it was only in the 1960s that the presence of a virtually all-dark *Oenanthe* population in this region was realised by J. Ferguson-Lees and D. I. M. Wallace (see Nelson 1973, Wallace 1983). They, along with subsequent observers such as Macfarlane (1978) and Clarke (1981), attributed their observations to *O. picata opistholeuca*. Only with the simultaneous publication of Tye (1994) and Andrews (1994) was it accepted that this population represented a black morph of *O. lugens*, although L. Cornwallis *in* Cramp (1988) had already suggested that the typical wing pattern of *O. l. lugens* found in these birds was evidence of their true affinity.

This interpretation has stood largely unchallenged until now, with the exception of brief remarks in van der Vliet & Lange (1997), whilst Khoury *et al.* (2010) suggested that the basalt desert population of *O. lugens* might warrant 'independent taxonomic status from the typical morph of *lugens*'. However, a molecular study (using the 16S and cox1 mitochondrial genes) published concurrently to Khoury *et al.* (2010) by some of the same team suggested that the basalt population 'is best treated as a colour morph of the subspecies *O. lugens lugens*, since our genetic data ... reveals no difference', and that 'its colouration might be regarded as a morphological adaptation to the local conditions in the black-basalt shield' (Förschler *et al.* 2010: 764–765).

HS's interest in this population began on his first visit to Tring in 1985, when he found that the 'black wheatear' of eastern Jordan belonged with *lugens* and not *picata*, based on wing formula and that the female specimen held there was quite unlike that of the sexually dimorphic *O. p. opistholeuca*. The interest has continued during preparations for a monograph on the *Oenanthe* (Shirihai *et al.* in prep.), and together with the late A. J. Helbig, HS visited its breeding range in April 2000 and 2001, taking blood samples and making detailed observations. They became convinced that the basalt population merited taxonomic recognition, despite finding very low mitochondrial genetic divergence from *lugens*, but these findings went unpublished due to AJH's sudden death in October 2005. Although research into the basalt population is still ongoing, by ourselves, and others, we believe that the arguments for its taxonomic recognition are sufficiently powerful to describe it as:

## *Oenanthe lugens warriae*, subsp. nov., Shirihai & Kirwan
## Basalt Wheatear

***Holotype.***—Natural History Museum, Tring (BMNH 1947.14.214); first-year female collected by W. K. Bigger at 'Aneizeh, Transjordan', on 9 November 1926, and originally labelled '*Oenanthe leucopyga*' by the collector. Tye (1994) speculated that this locality is modern-day Jabal Aneiza (Unayzah) on the border between Jordan, Iraq and Saudi Arabia, at 32°15'N, 39°15'E; we have no reason to doubt this, despite lying outwith the known breeding range (I. J. Andrews *in* Tye 1994), especially given that other evidence demonstrates

Legend to plate on opposite page

Figure 3. Basalt Wheatear *Oenanthe lugens warriae*, in its characteristic basalt desert habitat, where it frequents wadi sides with more open soil cover, larger and variably-shaped rocks, and sometimes low bluffs, between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai)

Figure 4. Habitat of Basalt Wheatear *Oenanthe lugens warriae*, the desolate rolling boulder fields (often broken by low bluffs or road cuttings with boulder piles—as in the background here), between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai)

Figure 5. Basalt Wheatear *Oenanthe lugens warriae* shares its habitat with another endemic passerine taxon, the darkest subspecies of Desert Lark *Ammomanes deserti annae*, between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai)

the new taxon's capacity to appear outside the breeding range (see below). Label data: ovary small (annotated separately as being 'non-existent'); bill and legs black; irides dark brown; stomach contents seeds. Measurements of the holotype, other specimens and live birds of the new taxon appear in Table 1. Examination of feather wear and moult pattern (primary-coverts juvenile-retained) suggest that the holotype is a first-winter (Figs. 6–7).

*Other specimens.*—Another specimen of *O. l. warriae* is also held at BMNH, a presumed young female (short wing, overall browner hue to the black feathers, and reduced white in the remiges) from the Gould collection (BMNH 1881.5.1.933), which lacks a date and is labelled simply 'Egypt'. Because of the lack of good-quality locality or other data associated with this specimen, we refrain from assigning it paratype status. As noted by Tye (1994), Gould's localities are not always correct, but *warriae* has recently been photographed in Egypt (S. Baha El Din *in* Demey 2011), and this taxon may regularly disperse some distance (see below). Three additional specimens, of which two were described by Andrews (1994), are present in two Jordanian museums, but they have not been examined by us and are not assigned paratype status here. Nevertheless, we included measurements from the two birds detailed by Andrews (1994) in our analysis (Table 1) and studied photographs of one of them in Andrews (1994).

***Additional material examined / field work.***—We examined specimens of the entire *O. lugens* complex (*halophila*, *lugens*, *warriae*, *persica*, *lugentoides*, *boscaweni*, *lugubris*, *vauriei* and *schalowi*) at BMNH and the American Museum of Natural History (AMNH; New York). In particular, we studied variation in nominate *lugens* and *persica* at BMNH (see Table 1), but HS also studied 32 specimens mostly assigned to nominate *lugens* and which could be aged and sexed, in Tel Aviv University Zoological Museum. We have studied the following taxa in the field: *halophila* (GMK, in Morocco), *lugens* (GMK & HS, in Israel), *warriae* (HS in Jordan), *lugentoides* (GMK, in Yemen), *boscaweni* (GMK, in Oman and Yemen), *lugubris* (HS, in Ethiopia) and *schalowi* (HS, in Tanzania). Detailed field observations of *warriae* in Jordan involved 12 birds in 2000 and 17 in 2001, in the basalt desert roughly between Safawi and Ar Ruwayshid. To better understand individual (and age / sex) variation, especially the development of the white remiges pattern in nominate *lugens* dedicated field work was conducted in Israel's Negev Desert in October 2011. Forty-two individuals were observed, of which 11 were photographed in the field and 12 in the hand.

***Description of holotype.***—Colour names and numbers follow Smithe (1975). Between Colors 119 (Sepia) and 82 (Blackish Neutral Gray) over the head, neck, mantle, scapulars, upper back, and throat to lower belly, including the thighs, with bluish sheen that is strongest on the upperparts (none of the *O. l. lugens* examined show this as strongly or as extensively; at most slightly on scapulars and lesser coverts). Wings between Colors 119A (Hair Brown) and 219 (Sepia), but the longest and shortest tertials are new, adult-like, and approach the colour of the rest of the upperparts. Greater coverts closest to Color 219 (Sepia). Subterminal tail band and r1 same colour as the wings, but r2 on the right side of the tail and rr3–5 on the left side are new, adult-like and approach the rest of the upperparts in colour. White tips to the retained juvenile primary-coverts. Very narrow whitish-grey bases on the inner webs of the primaries, with very steep penetration to the bases of these feathers. First primary (p1) relatively short (about equal to the primary-coverts) and all dark greyish on the underside (all nominate *O. lugens* invariably have 25–75% of the inner web bright white at the base or the tip). Adult males of *warriae* also have the underside of p1 grey. Underwing-coverts as body, contrasting with the rest of the underwing, which is off-white. Emargination on pp3–5, and shallowly and short on p6. Rest of plumage (rump, uppertail-coverts and remainder of tail) is white; the undertail-coverts are essentially also white, but some feathers are partially washed pale sandy-cream (visible in certain light / angles).

TABLE 1

Measurements of *Oenanthe* wheatears, principally specimens (held at the Natural History Museum, Tring, unless specified otherwise) but also two live birds trapped in Jordan by HS & AJH. All specimens measured by HS & N. Cleere, except two at the Jordan Museum of Natural History (Yarmouk Univ., Irbid) from Andrews (1994). Wing = flattened chord; tail-band = subterminal area of black, measured along shaft of outermost rectrix from below; rump patch = area of white on rump / uppertail-coverts, measured from below furthest extent of black on lower back (where border between them is solid) to longest white uppertail-coverts; and all other measurements based on standard protocols of Svensson (1992). All specimens sexed and aged by the authors, but only sex is shown, as morphometrics of *Oenanthe* do not differ with age (HS pers. obs.). For remarks concerning the sex / age of the 'Egypt' specimen of *O. l. warriae* see the main text. Figures below each sex class show mean (in bold) plus range (in parentheses) and standard deviation (±). We could not determine to which taxon the two Syrian specimens belong (see Further research), but have treated them separately. No mean or range is shown as only one specimen of each sex was available.

| sex | skin reg. no. | date | locality | wing | tail | tail-band | tarsus | hindclaw | bill to skull | bill to feathers | depth at rear nostrils | rump patch | pc><p1 | p1<p2 | p2 = | emargination p6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***O. l. lugens*—Egypt, Israel, Palestine and Jordan** | | | | | | | | | | | | | | | | |
| male | 1924.3.17.28 | 4 Apr. 1923 | 25 miles E of Cairo | 92.5 | 62 | 7 | 27.1 | 6 | 18 | 14.5 | 4 | 48 | 3.3 | 47.5 | p5/6 | no |
| male | 1879.4.5 | 18 Jan. 1864 | Masaba | 95 | 62 | 9 | 26.2 | 6.4 | 19.3 | 13.2 | | 49 | 5.5 | 46.5 | p5/6 | no |
| male | 1965.M.12114 | 2 Apr. 1919 | Jordan Valley | 96 | 62.5 | 11 | 27 | 7.5 | 19.7 | 14 | 4.2 | | 5.8 | 47 | p5/6 | no |
| male | 1926.1.5.1 | 25 Nov. 1922 | Jericho–Jerusalem road | 94 | 66 | 9 | 24.5 | 5.1 | 19.9 | 13 | 4.2 | 49 | 4.4 | 44.3 | p5/6 | no |
| male | 1934.1.1.4251 | no date | Palestine | 92 | 61 | 9 | 25.8 | 6.4 | 19.7 | 13 | | 43 | 1.9 | 43.8 | p5/6 | no |
| male | 1919.7.20.90 | 11 Nov. 1918 | Palestine | 95 | 63 | 9 | 26.3 | 6.5 | 19.5 | 13.5 | 4.4 | 48 | 5.2 | 44.7 | p5/6 | no |
| male | 1919.7.20.91 | 12 Mar. 1919 | Palestine | 94 | 61 | 10 | 26.7 | 6.4 | 20 | 14.1 | 4 | 43 | 3.4 | 44.9 | p5/6 | no |
| male | 1864.11.22.12 | no date | no locality | 95 | 63 | | 27.2 | 6.6 | 18.8 | 13.2 | 4.4 | 50 | 3.2 | 45.4 | p5/6 | no |
| male | 1946.63.55 | 9 Nov. 1944 | NW Dead Sea | 95 | 65 | 11 | 25.5 | 6.4 | 18.3 | 12.3 | 4.9 | 48 | 6 | 44.7 | p5/6 | no |
| male | 1965.M.12113 | 8 Mar. 1923 | Jericho–Jerusalem road | 92 | 58 | 12 | 26.7 | 6.1 | 18.7 | 13.5 | 4.6 | 51 | 2.4 | 43 | p5/6 | no |
| male | 1898.9.1.2273 | 13 Jan. 1864 | Masaba | 91 | 56 | 10 | 25 | 6.8 | 19.1 | 12.3 | | | 4.1 | 41.7 | p5/6 | no |
| male | 1965.M.12112 | 8 Mar. 1923 | Jericho–Jerusalem road | 92.5 | 60 | 13 | 26.9 | 7.1 | 20.4 | 14 | 4.8 | 48 | 4.8 | 42.4 | p5 | no |
| male | 1945.31.27 | 18 Mar. 1922 | SE of Jerusalem | 89 | 59 | 11.5 | 27.3 | 6.5 | 19 | 14.1 | 4.4 | 42 | 4.3 | 44 | p5/6 | no |
| male | 1946.63.54 | 4 Nov. 1944 | NW Dead Sea | 91 | 60 | 9 | 25.3 | 6.8 | 19.6 | 13.6 | 4.8 | 43 | 5.1 | 43.5 | p5/6 | no |
| ***n*=14** | | | | **93.14** (89–96) | **61.32** (56–66) | **10.03** (7–13) | **26.25** (24.5–27.3) | **6.47** (5.1–7.5) | **19.28** (18.0–20.4) | **13.45** (12.3–14.5) | **4.15** (4.0–4.9) | **46.83** (42–51) | **4.24** (1.9–6.0) | **44.52** (41.7–47.5) | | |
| | | | | sd = 2.023 | sd = 2.657 | sd = 1.613 | sd = 0.895 | sd = 0.551 | sd = 0.675 | sd = 0.665 | sd = 0.316 | sd = 3.157 | sd = 1.261 | sd = 1.677 | | |

| sex | skin reg. no. | date | locality | wing | tail | tail-band | tarsus | hindclaw | bill to skull | bill to feathers | depth at rear nostrils | rump patch | pc><p1 | p1<p2 | p2 = | emargination p6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| female | 1926.9.20.25 | 16 Sep. 1925 | Jericho | 87 | 56 | 11 | 25.8 | 7.5 | 19.2 | 12.4 | 4.6 | 52 | 4.3 | 40.5 | p5/6 | no |
| female | 1947.14.204 | 12 Nov. 1921 | Jericho | 91 | 60 | 8 | 26.3 | | 18.7 | 12.8 | 4.6 | 43 | 1.8 | 44.2 | p5/6 | very shallow |
| female | 1965.M.12117 | 8 Mar. 1923 | Jericho–Jerusalem road | 92 | 62 | 8 | 26 | 6.6 | 19 | 12.9 | 4.4 | 49 | 3 | 48.7 | p5/6 | no |
| female | 1919.7.20.93 | 2 Apr. 1919 | Palestine | 90 | 60 | 14 | 26.1 | 6.7 | 18.8 | 12.2 | 4.4 | | 4 | 46 | p5 | shallow |
| female | 1879.4.5 | 30 Dec. 1865 | Palestine | 85 | 55 | 11 | 24.7 | 6.4 | 19.2 | 13.1 | 4.5 | 45 | 5.2 | 40.8 | p5/6 | no |
| female | 1965.M.12118 | 8 Mar. 1923 | Jericho–Jerusalem road | 90.5 | 64 | 14 | 25.5 | 5.8 | 18.8 | 13.2 | 4.2 | | 6.4 | 41.5 | p6 | no |
| female | 1919.7.20.92 | 23 Mar. 1918 | Palestine | 91.8 | 60 | 14.5 | 24.8 | 5.5 | 18.2 | 14 | 4.3 | | 2.2 | 45.5 | p5/6 | no |
| female | 1965.M.12120 | 12 Mar. 1923 | Petra, Jordan | 87.5 | 57 | 9 | 25.6 | 7.2 | 19.5 | 13.3 | 4.4 | 45 | 4.9 | 41.2 | p5/6 | no |
| *n*=8 | | | | **89.35** (85–92) | **59.25** (55–64) | **11.18** (8.0–14.5) | **25.6** (24.7–26.1) | **6.52** (5.5–7.5) | **18.92** (18.2–19.5) | **12.98** (12.2–14.0) | **4.43** (4.2–4.6) | **46.8** (43–52) | **3.97** (1.8–6.4) | **43.55** (40.5–48.7) | | |
| | | | | sd = 2.545 | sd = 3.058 | sd = 2.724 | sd = 0.585 | sd = 0.711 | sd = 0.395 | sd = 0.559 | sd = 0.138 | sd = 3.633 | sd = 1.566 | sd = 3.008 | | |
| ***O. l. warriae*—'Egypt' and Jordan** | | | | | | | | | | | | | | | | |
| male | live bird trapped | 4 Apr. 2000 | north-east Jordan (*c*.32°13'N, 37°12'E) | 97 | 64.5 | 18 | 26.5 | | 18.5 | | | | -0.5 | 49 | p5/6 | no |
| male | 677 (Jordan Natural History Museum) | 27 Jan. 1985 | Safawi, Jordan | 99 | 65 | 19 | 27 | | 18.5 | | | | | | | |
| male | 678 (Jordan Natural History Museum) | 27 Jan. 1985 | Safawi, Jordan | 99 | 65 | 19 | 27 | | 18.5 | | | | | | | |
| *n*=3 | | | | **98.33** (97–99) | **64.83** (64.5–65.0) | **18.66** (18–19) | **26.83** (26.5–27.0) | | **18.5** | | | | n/a | n/a | | |
| | | | | sd = 1.154 | sd = 0.288 | sd = 0.577 | sd = 0.288 | | | | | | | | | |
| female | live bird trapped | 4 Apr. 2000 | north-east Jordan (*c*.32°13'N, 37°12'E) | 92.5 | 62.5 | 14.9 | 25.5 | | 18 | | | | -0.5 | 47 | p5/6 | no |

| sex | skin reg. no. | date | locality | wing | tail | tail-band | tarsus | hindclaw | bill to skull | bill to feathers | depth at rear nostrils | rump patch | pc<p1 | p1<p2 | p2 = | emargination p6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| female | 1947.14.214 BMNH | 9 Nov. 1926 | Aneizeh, Transjordan | 92 | 62 | 16 | 25.2 | 5.6 | 19.5 | 13.3 | 4.4 | 30 | 0.5 | 46.2 | p5/6 | shallow |
| female? | 1881.5.1.933 BMNH | no date | Egypt' | 92 | 65 | 15 | 26.3 | 6.5 | 18.1 | 12.3 | 4.3 | 35 | 1.8 | 47.7 | p5/6 | no |
| *n*=3 | | | | **92.16** (92.0–92.5) | 63.16 (62–65) | **15.3** (14.9–16.0) | **25.66** (25.2–26.3) | **6.05** (5.6–6.5) | **18.53** (18.0–19.5) | **12.8** (12.3–13.3) | **4.35** (4.3–4.4) | **32.5** (30–35) | **0.6** (-0.5–1.8) | 46.96 (46.2–47.7) | | |
| | | | | sd = 0.288 | sd = 1.607 | sd = 0.608 | sd = 0.568 | SD = 0.636 | sd = 0.838 | sd = 0.707 | sd = 0.071 | sd = 3.535 | sd = 1.153 | sd = 0.750 | | |
| **Subspecies unknown—Syria (see text)** | | | | | | | | | | | | | | | | |
| male | 1946.63.56 | 19 Dec. 1944 | Ras Baalbec, Anti-Lebanon, Syria | 95 | 61 | 12 | 23.4 | 6.7 | 18.7 | 12.2 | 4.6 | 46 | 1.8 | 49.6 | p5/6 | no |
| female | 1905.10.11.18 | 24 Mar. 1905 | Karyatein, Syria | 92 | 62 | 15 | 25.5 | 6.4 | 17.6 | 11.9 | 4.6 | 45 | 2.2 | 44.6 | p5/6 | no |
| *n*=2 | | | | | | | | | | | | | | | | |
| ***O. l. persica*—wintering birds in Arabia and Egypt** | | | | | | | | | | | | | | | | |
| male | 1965-M12130 | 25 Jan. 1948 | Birka, Saudi Arabia | 96 | 64 | 17.6 | 25.9 | 5.9 | 20.4 | 13.4 | | 37 | 4.2 | 47.1 | p5/6 | 6 |
| male | 1935.1.5.177 | 10 Nov. 1934 | Riyadh, Saudi Arabia | 97 | 64 | 22 | 25.8 | 5.6 | 20.6 | 13.5 | 4.4 | 46.2 | 2.1 | 47.5 | p5/6 | none |
| male | 1965.M.12127 | 5 Feb. 1951 | Hofuf, Hasa, Saudi Arabia | 95 | 66 | 22 | 27.3 | 5.6 | 20.3 | 13 | 4.1 | 45.8 | 2.5 | 46.3 | p6 | none |
| male | 1965.M.12129 | 29 Jan. 1948 | Ashaira, Saudi Arabia | 98 | 65 | 21 | 25.9 | 6.5 | 19.1 | 13.6 | 4.2 | 35.8 | 1.7 | 48.9 | p5/6 | 6 |
| male | 1975.10.161 | 12 Feb. 1971 | Jebel Al-Dukhan, Bahrain | 94 | 63 | 17 | 25.5 | 5.4 | 18.3 | 13 | 4.5 | 42.8 | -2 | 48.2 | p6 | none |
| male | 1934.9.20.242 | 4 Feb. 1934 | Jeddah, Saudi Arabia | 96 | 65 | 17 | 26.5 | 5.3 | 19.3 | 13.1 | 4.4 | 43.5 | 3.6 | 46.5 | p5/6 | none |
| male | 1965.M.12123 | 11 Nov. 1918 | Talaat-Ed-Dum, Jordan Valley | 89 | 60 | 15 | 25.1 | 6.6 | 19 | 13.7 | 4.4 | 31.8 | 2.9 | 42.1 | p5/6 | 6 |
| male | 1935.1.5.179 | 12 Nov. 1934 | Jubaila, Riyadh, Saudi Arabia | 94.5 | 62 | 16 | 23.1 | 6.3 | 20 | 13.8 | 4.1 | 44.4 | 0 | 47.1 | p6 | 6 |
| male | 1935.1.5.180 | 13 Nov. 1934 | Jubaila, Riyadh, Saudi Arabia | 98 | 65 | 15 | 24.9 | 6 | 19.4 | 13.7 | 4.3 | 42 | 6.6 | 45.4 | p5/6 | none |
| male | 1934.9.20.247 | 13 Feb. 1934 | Jubaila, Riyadh, Saudi Arabia | 95 | 65 | 16 | 23.5 | 6.7 | 19.2 | 12.6 | 4.1 | 42.7 | 4.8 | 43.6 | p6 | none |

| sex | skin reg. no. | date | locality | wing | tail | tail-band | tarsus | hindclaw | bill to skull | bill to feathers | depth at rear nostrils | rump patch | pc><p1 | p1<p2 | p2 = | emargination p6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| male | 1895.5.1.568 | 26 Feb. 1868 | Egypt | 95 | 64 | 15 | 24.6 | 5.6 | 18.6 | 12.5 | 4.3 | 49.6 | 1.6 | 46.9 | p5/6 | none |
| male | 1936.6.29.37 | 9 Jan. 1936 | Hadda, Wadi Fatima, Saudi Arabia | 91.5 | 59.5 | 17 | 26.3 | 5.3 | 18 | 11.9 | 4.4 | 42.3 | 2.3 | 44.6 | p5/6 | none |
| ***n*=12** | | | | **94.91** (89–98) | **63.54** (59.5–65.0) | **16.71** (15–22) | **25.36** (23.1–27.3) | **5.9** (5.3–6.7) | **19.35** (18.0–20.6) | **13.15** (11.9–13.8) | **4.29** (4.1–4.5) | **41.99** (31.8–49.6) | **2.52** (-2.0–6.6) | **46.18** (42.1–48.9) | | |
| | | | | sd = 2.583 | sd = 2.061 | sd = 2.641 | sd = 1.212 | sd = 0.513 | sd = 0.836 | sd = 0.583 | sd = 0.144 | sd = 4.922 | sd = 2.225 | sd = 1.953 | | |
| female | 1937.4.17.349 | 24 Nov. 1936 | Upper Habauna & Najran District, Saudi Arabia | 88 | 59.5 | 15 | 24.3 | 6 | 18 | 14.6 | 4.2 | 35 | 3.5 | 43 | p5/6 | 6 |
| female | 1934.9.20.241 | 27 Jan. 1934 | Jeddah, Saudi Arabia | 91 | 60 | 18 | 22.9 | 4 | 18.6 | 13.5 | 4.1 | 39 | 4 | 42 | p5/6 | 6 |
| female | 1934.9.20.243 | 29 Jan. 1934 | Wadi Fatima, Saudi Arabia | 98 | 64 | 16 | 35.6 | 6 | 19 | 14.5 | 4.7 | | 3 | 47 | p5/6 | 6 |
| female | 1934.9.20.244 | 31 Jan. 1934 | Jenin, Mecca, Saudi Arabia | 90.5 | 60 | 18 | 24.4 | 6 | 18.7 | 15 | 4.3 | 30 | 3 | 43 | p5/6 | none |
| female | 1934.9.20.248 | 27 Feb. 1934 | Jeddah, Saudi Arabia | 90 | 60.5 | 16 | 25 | 7 | 17.2 | 14.6 | 4.3 | 21 | 2 | 43 | p5/6 | none |
| female | 1935.1.5.181 | 14 Nov. 1934 | Jabal Pukham, Saudi Arabia | 90.5 | 57 | 16 | 26.1 | 6 | 18.8 | 14.8 | 4.2 | 32 | 3.5 | 41 | p5/6 | none |
| female | 1965.M.12122 | 21 Feb. 1928 | Kosseir (= Quseir), Egypt | 90 | 62 | 16 | 26 | 6 | 18.2 | 13.7 | 4.1 | 38 | 3 | 42 | p5/6 | none |
| female | 1965.M.12126 | 21 Jan. 1951 | Bahrain | 91 | 58 | 19 | 21 | 4 | 17.8 | 14.1 | 4.4 | 35 | 2 | 44 | p5/6 | none |
| female | 1965.M.12125 | 19 Jan. 1951 | Bahrain | 97 | 64 | 18 | 25.2 | 5 | 18.5 | 14.3 | 4.2 | 44 | 4 | 48 | p5/6 | none |
| female | 1965.M.12128 | 1 Feb. 1951 | Hofuf, Hasa, Saudi Arabia | 94 | 59 | 18 | 25.4 | 6 | 18.7 | 14.6 | 4.1 | 45 | 3 | 44 | p5/6 | 6 |
| female | 1965.M.12131 | 6 Feb. 1948 | Sail Kebir, Saudi Arabia | 94 | 61 | 18 | 23.6 | 6 | 18.3 | 15 | 4.6 | 40 | 4 | 45 | p5/6 | none |
| ***n*=11** | | | | **92.18** (88–98) | **60.45** (57–64) | **17.18** (15–19) | **25.4** (21.0–35.6) | **5.63** (4–7) | **18.34** (17.2–19.0) | **14.42** (13.5–15.0) | **4.29** (4.1–4.7) | **35.9** (21–45) | **3.0** (2.0–4.0) | **43.81** (41–48) | | |
| | | | | sd = 3.148 | sd = 2.218 | sd = 1.300 | sd = 3.689 | sd = 0.924 | sd = 0.522 | sd = 0.490 | sd = 0.202 | sd = 7.093 | sd = 0.716 | sd = 2.136 | | |

Figures 6–7. Holotype of Basalt Wheatear *Oenanthe lugens warriae* (BMNH 1947.14.214; the top bird in both figures) compared to Mourning Wheatear *Oenanthe l. lugens* (bottom; BMNH 1926.9.20.25, Jericho) (Hadoram Shirihai / © Natural History Museum, Tring). The holotype was originally misidentified as White-crowned Wheatear *O. leucopyga* by the collector, subsequently assigned to Variable (Eastern Pied) Wheatear *O. picata opistholeuca*, and only in 1985 realised to be most closely related to *O. lugens*. These images show its unique characters, especially the black underparts, the lack of any peachy rufous colour on the undertail-coverts, the all-black head, small white rump, and the relatively broad subterminal tail-band.

***Diagnosis.***—Readily distinguished from the rest of the *O. lugens* complex by the lack of any deep buff, peachy to pale orange-rufous coloration on the undertail-coverts, which feature characterises all of the other taxa mentioned above. The undertail-coverts are essentially white or dusky white, but often tinged sandy cream or grey, apparently due to discoloration by the local soil. Nevertheless, even in such birds, this sandy hue is never extensive or as contrastingly peachy orange as in *O. l. lugens*. The almost completely black plumage, without any pale feathers on the crown, nape or underparts, provides a further obvious distinction from the rest of the complex. Further, the amount and pattern of white in the remiges are an important taxonomic distinction across the *lugens* complex. The pattern of white in *warriae* is very different from that in all ages of nominate *lugens*, and only superficially closer to *persica* (Appendices 1–2). Despite the limited sample for *warriae* compared to *O. l. lugens*, the geographically most proximate taxon, morphometric differences appear rather significant, namely the longer wing and tail (*c.*5% longer and virtually no overlap in males: Table 1) but shorter bill (*c.*2.5% with extensive overlap), and the distinctly smaller white rump / uppertail-coverts patch but broader black subterminal band (in both latter 30–40% differences and no overlap with *O. l. lugens*). These last two features are significant in *Oenanthe* taxonomy, playing major roles in display / territory signalling. The much shorter distance between the primary-coverts and first primary (p1, the outermost), but considerably longer distance between p1 and p2, provide further means of separation, at least in the hand, and some of these mensural characters also apply *vis-à-vis* other populations of *O. lugens sensu lato*. See Table 1 and Figs. 6–9.

Morphometric data, both those published here and those recently presented by Förschler *et al.* (2010: 764), suggest that *warriae* is closest to *O. l. persica*, and a detailed study of the ecomorphology of *warriae*, like that conducted by Kaboli *et al.* (2007) for many other wheatears, might prove interesting. *O. l. warriae* to some extent approaches North African *O. l. halophila* in that males of the latter have reduced white in the remiges and paler buffish undertail-coverts. Moreover, *warriae* has a small white rump like males of the southern Arabian *O. lugentoides* (adult males also share a rather similar white pattern in the primaries, and both taxa have dusky-coloured juvenile plumages); the molecular relationship of these two has not been compared, *cf.* Förschler *et al.* (2010). *O. l. warriae* and *lugentoides* broadly occupy the northern and southern ends of the Arabian Plate, respectively, while their

Figure 8. Tail pattern of Basalt Wheatear *Oenanthe lugens warriae* from above, between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai)

Figure 9. Tail patterns of Basalt Wheatear *Oenanthe lugens warriae* (left-hand bird: BMNH 1947.14.214) and *O. l. lugens* (BMNH 1926.9.20.25, at right) from below. Basalt Wheatear has the broader black tail-band, as well as mostly white (not rufous) undertail-coverts, but sometimes partially tinged sandy cream (like here), dusky white or greyish on some feathers (Hadoram Shirihai / © Natural History Museum, Tring)

white rump and remiges patterns closely recall *O. lugubris* of the East African Rift Valley. However, within the context of *O. lugens sensu lato*, *halophila*, *lugentoides* and *lugubris* are all sexually dimorphic. *O. l. warriae* is intermediate between the monomorphic and truly dimorphic taxa in the complex, especially in wing pattern compared to *O. l. lugens*, and with experience most birds can be sexed if correctly aged (see Appendix 1). Further, Khoury *et al.* (2010) also found that *warriae* has a distinctive dark juvenile plumage. The longer, more pointed wings of *warriae* suggest that it undertakes substantial post-breeding dispersal, which corresponds with records in south-east Turkey, south Israel (for both see Distribution, habitat and conservation), and Egypt (see above). This dispersal resembles *persica*, but is unlike nominate *lugens*, which disperses only short distances, including altitudinally (Shirihai 1996, Khoury *et al.* 2010).

In the field, separation of *O. l. warriae* from male Variable Wheatear *O. picata opistholeuca* (which is often relegated to morph status in the literature; see discussion under Taxonomic rank) is extremely difficult. Both BMNH specimens were formerly treated as this taxon, until Tye (1994) elucidated their true identity. However, *contra* Tye (1994), both specimens are young females, aged and sexed by the combination of spotty white (juvenile-retained) primary-covert tips, the less intense black plumage (even slightly brownish-tinged in the Egyptian specimen) and especially the very limited greyish white on the inner webs of the remiges. They thus hardly differ from male *opistholeuca* in wing pattern. Adult *warriae*, especially males, possess more white on the inner webs of the remiges (almost comparable to *persica*: *cf.* Figs. 10–11 vs. Fig. 18) than in any male *opistholeuca*. However, the pale panel is hardly visible in flight in young birds, especially females (e.g. Figs. 13, 14 and 16), being much like *opistholeuca*, meaning that separation must focus on structural characters. And *vice versa*, male *opistholeuca* can be excluded using this feature only if compared to an adult male *warriae*. Any vagrant *warriae* or male *opistholeuca* will require full documentation with photographs and, preferably, an in-the-hand examination of the wing (see below).

In general, *opistholeuca* has a proportionately longer tail, affording it a slimmer appearance than *warriae*, broader spacing between the primaries, and the wingtip (pp3–4) usually shows only four obvious primary tips beyond the bunched secondaries, with a notably shorter distance between them and p7. In Basalt Wheatear, however, usually five closely spaced primary tips are visible (apart from the wingtip), and the distance between p7 and the secondaries is wider. These differences appear consistent and are the best means

to separate the two taxa, but only if the birds' plumage is not heavily worn or in moult. A supporting character is the tail-band, averaging slightly broader in *warriae* and more even on both webs of r6, but in *opistholeuca* narrower and tends to be less even, with dark on the outer webs averaging longer still, forming a pattern recalling Pied Wheatear *O. pleschanka* or Black-eared Wheatear *O. hispanica*. Due to its shorter tail and longer wings, in Basalt Wheatear the distance between the wingtip and the proximal edge of the tail-band is usually shorter. The plumages of the two taxa, in general, are surprisingly similar, but *warriae* tends to have the black lower belly more clearly demarcated from the white undertail-coverts, whereas in *opistholeuca* the border is more diffuse, with more white feathers admixed and usually reaches the undertail-coverts at the sides, leaving a paler central area; however, there is overlap due to individual variation. The juvenile primary-coverts of *warriae*, like all *O. lugens sensu lato*, possess broader whitish tips (bolder and concentrated on the tips of the inner webs) with indistinct narrow fringes to the outer webs, which with wear become a line of spots (again, more distinct on the inner webs). In young male *opistholeuca* the tips / fringes are more even, extend further along the edge on the outer webs and do not form a spotted pattern with wear (*cf.* Figs. 2 and 19 of *warriae* vs. Fig. 21 of male *opistholeuca*). On landing, *opistholeuca* frequently engages in deep bobbing, whereas such behaviour is infrequent and less obvious in *O. lugens*, but individual variation probably renders this of limited use. In the hand, *warriae* can be separated by wing formula: p2 = p5/6, with emarginated pp3–5 (none or very indistinct on p6); in *opistholeuca* p2 = p6 or 6/7, with emarginated pp3–6 (the vast majority have clearly emarginated p6, but in some this is rather indistinct; Shirihai & Svensson in press). Further, in *warriae* the p1 falls about level with the tips of the primary-coverts (p1 > pc, mean 0.6 mm; Table 1), whereas in *opistholeuca* it usually is much longer (p1 > pc 2.5–7.5 mm, mean 4.9 mm; Shirihai & Svensson in press, Shirihai *et al.* in prep), which sometimes can even be detected in the field (compare Figs. 20 and 21).

Separation of *warriae* from White-crowned Wheatear *O. leucopyga*, which also occurs in eastern Jordan, to where it has apparently spread recently (Andrews *et al.* 1999, Khoury *et al.* 2010), is easier, even for individuals that are wholly or largely black-crowned (mostly first-years), using tail pattern, as in *leucopyga* it is almost always only / mostly the central rectrices that are black. Very rarely *leucopyga* develops a complete, inverted black T shape pattern on the tail, like *opistholeuca* and *warriae*, but remains diagnostically strongly glossed and is a larger bird. The geographically distant Black Wheatear *O. leucura* (Iberia and north-west Africa) is also difficult to separate from *opistholeuca* and *warriae*, but is distinctly larger and more heavily built, and its wing structure very different, especially the considerably shorter primary projection but longer p1 (Shirihai & Svensson in press). With hindsight, the lack of knowledge of Basalt Wheatear has caused it to be misidentified as all the above taxa, including the type specimen and the first two Israeli records (see p. 286).

No published analysis of vocalisations is available, although HS noted, during his observations in 2000–01, that the song of *O. l. warriae* is more complex, overall lower pitched, albeit with higher warbling sounds admixed, and lacks some of the deep fluting notes of *O. l. lugens*. These conclusions require more detailed study that should include the undescribed vocalisations of *O. l. persica*. Colour illustrations or photographs of the new taxon appear in a number of works, notably Andrews (1994, 1995: Plate 27), van der Vliet & Lange (1997), Andrews *et al.* (1999: 29; a leucistic bird), Boon (2004: 230), Collar (2005: Plate 80), Balmer & Murdoch (2009: 218), Svensson *et al.* (2009), Khoury *et al.* (2010) and Porter & Aspinall (2010: 311).

***Distribution, habitat and conservation.***—As a breeder *O. l. warriae* is found almost exclusively in the basalt deserts of eastern Jordan and southern Syria (Fig. 22). Its range reaches as far south and west as the near environs of Azraq, Shaumari and Umari in Jordan (Clarke 1981, Andrews 1994), perhaps east to Jabal Aneiza on the border between Jordan,

Figures 10–15. Age and sex variation in Basalt Wheatear *Oenanthe lugens warriae*, between Azraq and Ar Ruwayshid, Jordan, April 2000 (Hadoram Shirihai). Left three images (Figs. 10–12) of an adult male and right three images of a first-summer female (Figs. 13–15) (measurements of these birds are in Table 1). Note the blacker-blue gloss to the adult male, which can be aged by the lack of any strong moult contrast in the wing, the strongly textured and uniformly black adult remiges, primary-coverts and tail, whilst the primary-coverts lack any white tips. The young female is less glossed and somewhat browner on the dark areas, with worn and bleached, juvenile-retained remiges and primary-coverts; the latter also possess white spots on their tips. The adult male has broader and purer white inner webs, visible on both surfaces, which are either reduced or lacking in the young female. The white on the inner webs does not reach the shafts, but does reach the base of the feathers, while the first primary is very short, and the broad black tail-band makes *warriae* closer in morphology to *O. l. persica* than to the geographically proximate *O. l. lugens*. These and other plumage features, especially overall coloration, make this taxon virtually identical to male Variable Wheatear *O. picata opistholeuca*, especially first-summer female *warriae* which lack, or almost lack, the white upperwing panel. Only two diagnostic characters separate first-summer female *warriae* from male *opistholeuca*: the more pointed wingtip and longer primary projection with more evenly spaced primary tips and one extra visible primary, and the spotty white tips to the post-juvenile primary-coverts in Basalt Wheatear.

16

17

18

Legends to plate on p. 283

Figure 16. First-summer male Basalt Wheatear *Oenanthe lugens warriae*, southern Syria, February 2009 (Nicolas Martinez): note combination of worn, browner primaries, forming moult contrast with the secondary-coverts, and juvenile-retained primary-coverts with still some, very tiny, whitish tips, as well as blacker-blue gloss to the dark feathers. The lack of visible white on the inner webs of the remiges (even on the stretched wing) confirms that it is a young bird, and thus cannot be separated using this feature from male Variable Wheatear *O. picata opistholeuca*. Compare with adult male *warriae* (Fig. 10) which has visible white on the inner webs of the remiges.

Figure 17. Mourning Wheatear *Oenanthe l. lugens*, southern Israel, July 2008 (Amir Ben Dov). Nominate race cannot be sexed (male-like plumage occurs in females), but the uniform adult remiges, primary-coverts and tail age this bird as an adult (that has just ended its annual complete post-breeding moult). Note that unlike both *O. l. warriae* and *O. l. persica*, the white on the inner webs of the remiges reaches the shafts.

Figure 18. Mourning Wheatear with *Oenanthe lugens persica*-like characters, Palmyra, southern Syria, February 2009 (Nicolas Martinez). Note especially the *persica*-like narrow white patches on the inner webs of the remiges that do not reach the shafts, and the broad black tail-band. The latter makes *O. l. persica* and *warriae* closer in morphology to each other, than to *O. l. lugens*. Note also the evenly feathered wing (especially the lack of juvenile-retained primary-coverts), which confirms the bird is an adult and that the regimes pattern is not that of a young *lugens*. Because *O. l. persica* is migratory, such birds could have been wintering away from their usual winter range.

Iraq and Saudi Arabia (Tye 1994; see holotype), although its main range in Jordan probably reaches no further east than around Ar Ruwayshid. In the north and east it enters Syria as far at least as Jabal Sis (33°18'N, 37°22'E), south-east of Damascus (Macfarlane 1978, Baumgart *et al.* 1995). Further north, in the central Syrian desert, around Palmyra (34°33.196'N, 38°17.15'E), only more typically plumaged Mourning Wheatears are present (Serra *et al.* 2005), though see below. Its Jordanian range was mapped in Andrews (1994, 1995).

Although the ex-Gould collection specimen labelled 'Egypt' cannot be taken alone as proof that *O. l. warriae* performs longer-distance dispersal, there is another, far more recent claim (not yet assessed by the Egyptian records committee), a bird photographed at Shalatein, on 2 December 2010 (*cf.* Demey 2011). Records also exist from Israel, in December 1982 (E. Doverat), February 1986 (HS) (these two records were misidentified as Black and Variable Wheatears, respectively; Shirihai in prep.), December 1994 (Shirihai 1996), December 2004 (J. P. Smith & Y. Perlman: Fig. 19) and January 2010 (U. Makover) and, even more remarkably, one in south-east Turkey apparently nesting with a female Finsch's Wheatear *O. finschii* in spring 2011. In this context, a recent molecular study uncovered evidence of a close relationship between *O. finschii* and *O. lugens* (Aliabadian *et al.* 2007). Most observers resident in Jordan and Syria for longer periods have suggested the existence of short-range movements in the post-breeding season (e.g., Macfarlane 1978, Khoury *et al.* 2010). None of these extralimital records should be taken as evidence for *warriae* being a morph. Its long wing further hints at the possibility of regular migratory movements, and all confirmed records away from the basalt desert to date have involved young birds. The recent Turkish record is the only evidence of *warriae* breeding away from a clearly circumscribed geographical region, and then only as a hybrid pairing with *O. finschii* and outside of the range of the *O. lugens* complex.

Concerning habitat, *O. l. warriae* is apparently restricted to outcrops of Al Harra basalt flows (Andrews 1994: 34), but is 'generally absent from the featureless, rolling, boulder fields', being most frequently seen in areas of 'road cuttings, boulder piles and abandoned telegraph poles in addition to natural bluffs and the sides of wadis' (Andrews 1994: 34; see also Figs. 3–4). Mean annual precipitation here is just 50–250 mm, and the wheatears prefer hills and escarpments with steep slopes and high rock cover for breeding, but visit more level ground to forage, including the sides of tarmac roads (Khoury *et al.* 2010). They share the basalt desert with another unusually dark taxon, the Desert Lark *Ammomanes deserti annae* R. Meinertzhagen, 1923 (Fig. 5). The current status of *O. l. warriae* in Syria is

Figure 19. First-winter male Basalt Wheatear *Oenanthe lugens warriae*, Arava Valley, southern Israel, December 2001 (Yoav Perlman), showing the white undertail-coverts and the diagnostic white-spotted juvenile-retained primary-coverts and alula (only tiny white spots remain on their tips due to wear, but they are still fundamentally bold and concentrated on the tips to the inner webs).

Figure 20. First-summer male Basalt Wheatear *Oenanthe lugens warriae*, southern Syria, February 2009 (Nicolas Martinez). Some young *warriae* could lose (through wear) the diagnostic white-spotted juvenile-retained primary-coverts and alula rather earlier in the spring. Such birds could be misidentified as adults, but note the clear moult limits between the juvenile-retained (browner) and post-juvenile renewed (blackish) greater coverts. They could be more easily confused as male Variable Wheatear *O. picata opistholeuca* (due to the lack of white in the remiges and white primary-covert spots).

Figure 21. First-summer male Variable Wheatear *Oenanthe picata opistholeuca*, Feyzabad, north-east Afghanistan, May 2010 (Frank Joisten), showing how this taxon has virtually identical plumage to Basalt Wheatear *O. lugens warriae*. This bird is aged and sexed by combination of its juvenile-retained remiges and primary-coverts, and the black coloration to the dark plumage tracts. Compared to *warriae* it can be separated by the proportionately shorter primary projection (fewer exposed primary tips) but relatively longer tail and narrow black tail-band (distance between the latter and the wingtip much longer than in *warriae*, although this can be reliably judged only in profile and certain stances). Also unlike *warriae*, p1 is longer than the primary-coverts, which if visible could be a critical field mark. Note the overall jizz is more Pied Wheatear *O. pleschanka*-like in *opistholeuca* than in *warriae*, which is more compact and less long-tailed looking. This male *opistholeuca* has some remnants of the pale tips to the primary-coverts, but these are diffuse and on the outer webs, rather than bold tips concentrated on the inner webs, as in *warriae*.

very poorly known, but recent field work in north-east Jordan suggests that it is very rare, perhaps even on the verge of extinction there, possibly as a result of recent droughts and through competition with *O. leucopyga*, which has recently colonised this region (Khoury *et al.* 2010). By formally naming the Basalt Wheatear, even at the rank of subspecies, our hope is that conservation bodies will take greater interest in this unusual bird.

***Etymology***.—It gives HS & GMK great pleasure to name this *Oenanthe* for Mrs Frances E. ('Effie') Warr, former Librarian at BMNH, and long-time stalwart of the Council of the Ornithological Society of the Middle East. This association makes the naming of the new taxon in her honour especially appropriate. Over many years, she has provided innumerable ornithologists with countless courtesies. She is one of the unsung, backroom heroes of modern ornithology. The specific name *warriae* is a noun in the genitive case formed under Art. 31.1.1 of the ICZN (1999) Code, wherein the name Warr is Latinised. As regards its vernacular name, Basalt Wheatear has been in widespread 'unofficial' use for well over a decade, and we advocate its retention.

No previous name is available for the basalt population. Although Förschler *et al.* (2010) alluded to it as '*basalti*', this name is a *nomen nudum* because its initial use cannot be considered a valid nomenclatural act according to the *International code of zoological nomenclature* as, for example, no type specimen was nominated and no type description published (ICZN 1999, Arts. 13.1.1, 16.1, 16.4 and 72.3). We searched extensively for a previous name that might be applicable to this population, commencing with the synonymy of various *Oenanthe* taxa in Seebohm (1881) and including those names applied by the early German explorers of the Middle East and north-east Africa. Most interestingly, the type

of *Oenanthe leucura syenitica* (Heuglin, 1869), actually represents a taxon from the *lugens* complex and has similar features to *warriae*. However, all of the morphological evidence points to it being a different taxon (e.g., overall size, wing formula, tail-band width), especially as it was collected in June in either Egypt or Sudan.

***Taxonomic rank.***—Unlike Förschler *et al.* (2010) and Khoury *et al.* (2010), who were apparently in 'two minds' as to whether taxonomic status for the basalt population was warranted, we believe that it clearly is. Its position is unique. Morphometrically, this form groups with *O. l. persica*, a taxon ranked as species by Förschler *et al.* (2010). Yet clearly it cannot be considered a colour morph of the latter, especially given its genetically near-identical profile to *O. l. lugens*. Moreover, treating the basalt population as a colour morph is dubious given that it is both geographically circumscribed and lacks a morphological character found in all other populations of *O. lugens sensu lato*, i.e. the rufous-tinged undertail-coverts, unlike the black morph of *O. lugubris*, in which the undertail-coverts maintain the distinctive coloration (polymorphism in this taxon went unrecognised until the work of Vaurie 1949: 27–28).

Here, *O. l. warriae* is conservatively treated as a subspecies under a modern interpretation of the Biological Species Concept (e.g., Helbig *et al.* 2002), although we note that its plumage, mensural and other characters might, in combination, be sufficient to accord it species rank under the guidelines recently developed by Tobias *et al.* (2010; see Appendix 3). Analogously, Ticehurst (1922), Haffer (1986) and Panov (1992, 2005) rejected the concept that the three plumage types in *O. picata* represented colour morphs as espoused, for example, by Vaurie (1949), Ripley (1964), Cramp (1988), Collar (2005) and others, instead considering them to be valid taxa, a view that we find persuasive. That *O. l. warriae* is a colour morph of *O. lugens* is unlikely because this nearly all-black form is geographically restricted as a breeder to the basalt deserts of north-east Jordan and southern Syria (Andrews 1994, 1995), and intermediates or mixed pairs with *O. lugens* have not been observed to date (Andrews 1994). Tye claimed broad overlap and the existence of mixed pairings, but he lacked relevant field experience. Moreover, the unique characters of the basalt form appear to be stable, most importantly the lack of rufous on the undertail-coverts, judged by all published observations. Observers with experience of *O. l. warriae* have found little evidence of overlap and none of hybridisation, with typical-plumaged Mourning Wheatears and Basalt Wheatears apparently selecting different substrates (Andrews 1994, Khoury *et al.* 2010; HS & AJH pers. obs.). Khoury *et al.* (2010) found that juvenile plumage is also unique (although their sample size is not stated), providing further strong indication of the taxonomic validity of *O. l. warriae*. However, both our own unpublished genetic data and those of Förschler *et al.* (2010) indicate that variation in the *O. l. lugens* / *O. l. warriae* clade is just 0.2–0.3% in mtDNA and they are not diagnosable using barcoding methods. Thus we prefer to await further molecular and vocal data, and to test the potential biological significance of, for example, the very small white rump patch of *O. l. warriae*, before considering whether species-level separation might be warranted. Nonetheless, it might be mentioned that Randler *et al.* (2011) found that the *O. hispanica–melanoleuca–cypriaca–pleschanka* complex is also genetically 'uniform', offering a potential parallel with the *warriae* / *lugens* situation. Randler *et al.* (2011) maintained species status for *O. cypriaca*, despite lack of genetic differences. It seems that in *Oenanthe*, morphometrics, plumage characters and vocalisations (using well-controlled playback experiments) are of even greater import for determining species status than molecules.

Finally, the close genetic relationship of Basalt Wheatear to *O. l. lugens* further confirms that it is not a disjunct population of *O. picata opistholeuca* and, as described above, despite virtual identical plumage the latter differs clearly in measurements and wing formula from *O. l. warriae*.

Given the obvious plumage and some biometric differences, but the lack of genetic differentiation between *warriae* and other members of the *lugens* complex, their 'split' is presumably rather contemporary and presumably rests on natural selection favouring a darker form in the basalt desert. However, especially fascinating is how *O. l. warriae* has developed virtually identical plumage to male *O. p. opistholeuca*. Finally, the entire genus *Oenanthe* requires additional genetic analysis, as many relationships remain unresolved, including between several very well-differentiated species / groups.

***Future research.***—Major handbooks (e.g., Vaurie 1959, Cramp 1988) suggest that Syria is inhabited by *O. l. lugens*, and that it is a very widespread breeder there. However, available material of Mourning Wheatears from Syria is too limited to determine which taxon breeds there. For example, at BMNH there are just two specimens from Syria—both assigned to 'nominate' *lugens* (1946.63.56 and 1905.10.11.18)—but these proved impossible to assign to subspecies using morphometrics (Table 1). Both are first-years with juvenile-retained remiges and their *persica*-like white pattern on the primaries is inconclusive for identification (see *O. l. lugens*, Appendix 2), while in biometrics they either approach one or other subspecies, or appear intermediate. We also examined photographs of live birds from Syria, mostly from Palmyra, which seem to possess typical *O. l. persica* characters, but these were mostly taken in winter (e.g., Fig. 18). Because *O. l. persica* is migratory, such Syrian records (dated December–March) could have been wintering away from their usual range in eastern Arabia. HS recently found several winter specimens showing classic *O. l. persica* characters collected in southern Sinai, Egypt and southern Israel (Tel Aviv University Zoological Museum; including three adult males, 9718, 9624 and 2296). This suggests that *O. l. persica*-like birds occur regularly at least as far as west as the Levant in winter. It remains to be elucidated which taxon breeds over much of Syria. Should field work prove that most or all breeders are *persica*-like, this would suggest one of three possibilities: (1) that *persica* breeds much further west than currently thought, (2) the presence of a variable and perhaps intermediate population between *lugens* and *persica*, or (3) an undescribed taxon in Syria. The origin of *persica*-like birds recorded wintering within the range of the nominate in Sinai, Egypt and Israel is unresolved. This is particularly interesting with respect to *O. l. warriae*, whose morphometrics and tail pattern are closer to *persica*. Field research is required to resolve this issue. For now, it appears premature to adopt the 'borderline split' of *persica* (1.2–2.2% divergence in mtDNA from nominate; Förschler *et al.* 2010) until the identification of *persica*-like birds in Syria is resolved, and their relationship to *persica* breeding in Iran, as well as to *O. l. lugens* and *O. l. warriae*, have been more fully investigated employing molecular, vocal and additional morphological data.

**Acknowledgements**

This paper is dedicated to two '*Oenanthe* heroes'. Firstly, the late Gideon Zakkai (Gidi), friend of HS and pioneering researcher into the biology of *O. l. lugens* in the Negev Desert; he was also closely involved with the development of birding in Israel. Secondly, the late Andreas J. Helbig, who sadly died before he could complete his work with HS on a planned wheatear monograph. All three of us collaborated on the already published *Sylvia* monograph (2001). HS remembers well his work with Andreas on *warriae* in Jordan, *lugubris* in Ethiopia, and searching for Somali Wheatear *O. phillipsi* in remote Ethiopia. His rare talent united pioneering molecular work with a passion (never lost) for field study. Helbig played an important role in the groundwork for this paper and he supported its central conclusion; we are pleased to include him as a co-author in recognition of this. Nigel Cleere assisted HS to measure *O. l. persica* at BMNH. Many people associated with the Ornithological Center in Israel, particularly Dan Alon, supported HS's field work over many years, including some of his wheatear studies. Maria San Román and Eyal Shochat assisted HS to study variation within *O. l. lugens* in the Negev Desert in October 2011. Andrew Grieve helped prepare the table, Rene Pop prepared many of the figures from slides, and Magnus Ullman, our cartographic collaborator in the forthcoming *Handbook of Western Palearctic birds*, very kindly prepared the fine map at short notice. The following photographers provided images of Syrian birds: Nicolas Martinez, Tomas Haraldsson, Rob Gordijn and Klaas van Haeringen. Emin Yoğurtçuoğlu sent photographs of the Turkish Basalt Wheatear. Thanks also to Amir Ben Dov, Frank Joisten and Yoav Perlman for permitting use of their images here. We express, once

again, our constant appreciation to the staff of the Natural History Museum, Tring, especially Robert Prŷs-Jones, Mark Adams, Hein van Grouw and Alison Harding, for facilitating access to relevant specimens and literature. HS also thanks staff at the American Museum of Natural History, New York (Paul Sweet) and Tel Aviv University Zoological Museum (Daniel Berkowic and Dr Shai Meiri) for their kind assistance. Thanks also to Hans-Martin Berg and Dr Ernst Bauernfeind (Naturhistorisches Museum Wien) for photographs and measurements of the type of *Oenanthe leucura syenitica*. Normand David kindly checked our choice of name. Our referees, Martin Collinson, Urban Olsson, Robert Prŷs-Jones, Richard Schodde, Frank Steinheimer (who further assisted our efforts considerably by checking for potentially available and applicable names) and, most especially, Lars Svensson (who provided two sets of very detailed comments), made substantial contributions. Finally, we emphasise the broad inspiration we consistently acquire from Svensson's standard work *Identification guide to European passerines*, and his general approach to the taxonomy and identification of Western Palearctic passerines.

References:

Aliabadian, M., Kaboli, M., Prodon, R., Nijman, V. & Vences, M. M. 2007. Phylogeny of Palaearctic wheatears (genus *Oenanthe*)—congruence between morphometric and molecular data. *Mol. Phyl. & Evol.* 42: 665–675.

Andrews, I. J. 1994. Description and status of the black morph Mourning Wheatear *Oenanthe lugens* in Jordan. *Sandgrouse* 16: 32–35.

Andrews, I. J. 1995. *The birds of the Hashemite Kingdom of Jordan*. Privately published, Musselburgh.

Andrews, I. J., Khoury, F. & Shirihai, H. 1999. Jordan Bird Report 1995–97. *Sandgrouse* 21: 10–35.

Baha el Din, M. & Baha el Din, S. M. 2000. Occurrence of the North African subspecies of Mourning Wheatear *Oenanthe lugens halophila* in Egypt. *Sandgrouse* 22: 109–112.

Balmer, D. & Murdoch, D. 2009. Around the region. *Sandgrouse* 31: 208–222.

Baumgart, W., Kasparek, M. & Stephan, B. 1995. *Die Vögel Syriens: eine Übersicht*. Kasparek Verlag, Heidelberg.

Boon, L. J. R. 2004. 'Mourning Wheatears' illustrated. *Dutch Birding* 26: 223–236.

Clarke, J. E. 1981. The occurrence of Strickland's Wheatear in Jordan. *Sandgrouse* 2: 98–99.

Collar, N. J. 2005. Family Turdidae (thrushes). Pp. 514–807 *in* del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 10. Lynx Edicions, Barcelona.

Cramp, S. (ed.) 1988. *The birds of the Western Palearctic*, vol. 5. Oxford Univ. Press.

Demey, R. 2011. Recent reports. *Bull. Afr. Bird Cl.* 18: 93–109.

Dickinson, E. C. (ed.) 2003. *The Howard and Moore complete checklist of the birds of the world*. Third edn. Christopher Helm, London.

Förschler, M. I., Khoury, F., Bairlein, F. & Aliabadian, M. 2010. Phylogeny of the Mourning Wheatear *Oenanthe lugens* complex. *Mol. Phyl. & Evol.* 56: 758–767.

Guichard, K. M. 1955. The birds of Fezzan and Tibesti. *Ibis* 97: 393–424.

Haffer, J. 1986. Superspecies and species limits in vertebrates. *Zeitschr. Zool. Syst. Evolutionsforsch.* 24: 169–190.

Helbig, A. J., Knox, A. G., Parkin, D. T., Sangster, G. & Collinson, M. 2002. Guidelines for assigning species rank. *Ibis* 114: 518–525.

International Commission on Zoological Nomenclature (ICZN). 1999. *International code of zoological nomenclature*. Fourth edn. International Trust for Zoological Nomenclature, London.

Jennings, M. C. (ed.) 2010. *Atlas of the breeding birds of Arabia*. Fauna of Arabia, Frankfurt am Main & King Abdulaziz City for Science & Technology, Riyadh.

Kaboli, M., Aliabadian, M., Guillaumet, A., Roselaar, C. S. & Prodon, R. 2007. Ecomorphology of the wheatears (genus *Oenanthe*). *Ibis* 149: 792–805.

Khoury, F., Förschler, M. I., Janaydeh, M., Aliabadian, M. & Al-Hmoud, A.-R. 2010. Distribution, habitat and differentiation of the poorly-known black morph of Mourning Wheatear *Oenanthe lugens lugens* in Jordan. *Sandgrouse* 32: 113–119.

Macfarlane, A. M. 1978. Field notes on the birds of Lebanon & Syria 1974–77. *Army Birdwatching Soc. Per. Publ.* 3: 47–102.

Nelson, J. B. 1973. *Azraq: desert oasis*. Allen Lane, London.

Panov, E. 1992. Emergence of hybridogenous polymorphism in the *Oenanthe picata* complex. *Bull. Brit. Orn. Cl.* 112A: 237–249.

Panov, E. 2005. *Wheatears of [the] Palearctic. Ecology, behaviour and evolution of the genus Oenanthe*. Pensoft, Sofia.

Porter, R. F. & Aspinall, S. 2010. *Birds of the Middle East*. Second edn. Christopher Helm, London.

Porter, R. F., Christensen, S. & Schiermacker-Hansen, P. 1996. *Field guide to the birds of the Middle East*. T. & A. D. Poyser, London.

Randler, C., Förschler, M. I., Gonzalez, J., Aliabadian, M., Bairlein, F. & Wink, M. 2011. Phylogeography, pre-zygotic isolation and taxonomic status in the endemic Cyprus Wheatear *Oenanthe cypriaca*. *J. Orn.*: doi 10.1007/s10336-011-0744-8.

Ripley, S. D. 1964. Subfamily Turdinae, thrushes. Pp. 13–227 *in* Mayr, E. & Paynter, R. A. (eds.) *Check-list of birds of the world*, vol. 10. Mus. Comp. Zool., Cambridge, MA.

Roselaar, C. S. & Shirihai, H. in prep. *Geographical variation and distribution of Palearctic birds*, vol. 1. Christopher Helm, London.

Seebohm, H. 1881. *Catalogue of the birds in the British Museum*, vol. 5. Trustees of the Brit. Mus. (Nat. Hist.), London.
Serra, G., Abdullah, M., Al Assaed, A., Al Qaim, G. & Abdallah, A. K. 2005. A long-term bird survey in the central Syrian desert (2000–2003) – Part 1. *Sandgrouse* 27: 9–23.
Shirihai, H. 1996. *The birds of Israel*. Academic Press, London.
Shirihai, H. in prep. Correcting the identification of two rare wheatear records in Israel.
Shirihai, H., Keijl, G., Gargallo, G. & Copete, J. L. in prep. *Wheatears*. Christopher Helm, London.
Shirihai, H. & Svensson, L. in press. *Handbook of Western Palearctic birds*. Christopher Helm, London.
Smithe, F. B. 1975. *Naturalist's color guide*. Amer. Mus. Nat. Hist., New York.
Svensson, L. 1992. *Identification guide to European passerines*. Fourth edn. Privately published, Stockholm.
Svensson, L., Mullarney, K. & Zetterström, D. 2009. *Collins bird guide*. Second edn. HarperCollins, London.
Ticehurst, C. B. 1922. Notes on some Indian wheatears. *Ibis* 11(4): 151–158.
Tobias, J. A., Seddon, N., Spottiswoode, C. N., Pilgrim, J. D., Fishpool, L. D. C. & Collar, N. J. 2010. Quantitative criteria for species delimitation. *Ibis* 152: 724–746.
Tye, A. 1994. A description of the Middle Eastern black morph of Mourning Wheatear *Oenanthe lugens* from museum specimens. *Sandgrouse* 16: 28–31.
van der Vliet, R. & de Lange, R. 1997. 'Basalt Wheatear'. *Dutch Birding* 19: 18–19.
Vaurie, C. 1949. Notes on the bird genus *Oenanthe* in Persia, Afghanistan, and India. *Amer. Mus. Novit.* 1425: 1–47.
Vaurie, C. 1959. *The birds of the Palearctic fauna. Passerines*. H. F. & G. Witherby, London.
Wallace, D. I. M. 1983. The first identification of the Eastern Pied Wheatear in Jordan. *Sandgrouse* 5: 102–104.
Zimmerman, D. A., Turner, D. A. & Pearson, D. J. 1996. *Birds of Kenya and northern Tanzania*. Christopher Helm, London.

*Addresses*: Hadoram Shirihai, c/o Ausserdorfstraße 6, 8052 Zurich, Switzerland, e-mail: albatross_shirihai@hotmail.com. Guy M. Kirwan, Research Associate, Field Museum of Natural History, 1400 South Lakeshore Drive, Chicago, IL 60605, USA, e-mail: GMKirwan@aol.com. Andreas J. Helbig (deceased).

## Appendix 1: ageing and sexing Basalt Wheatear

We analysed all available *O. l. warriae* specimens or photographs, as well as trapped birds (see Table 1) and found that *warriae* shows clearer sexual differences than *O. l. lugens*. At least some can be reliably sexed if correctly aged first (by moult and feather wear / wing pattern, and pattern of the primary-coverts), combined with general plumage pigmentation, amount of white on the inner webs of the remiges (especially the primaries) and some biometrics (Table 1). *O. l. warriae* seems to undergo a complete post-nuptial moult (adults), while juveniles undertake a partial post-juvenile moult, in late summer / early autumn. Post-juvenile renewal includes the entire head, body, lesser and median coverts, most or all greater coverts, and usually some tertials and alula feathers; replacement of some rectrices appears irregular. Pre-nuptial moult seems absent or limited, though some spring birds have very fresh secondary-coverts and tertials that had apparently been renewed recently. Plumage and seasonal variation is as follows: **SPRING Adult** Generally less worn, or quite fresh until April, especially the primaries which are also blacker. Wings also lack any obvious moult limits or any other vestiges of immaturity (*cf.* first-summer). Adult ♀ has black areas generally duller, less strongly glossed metallic blue and purple as in adult ♂, and extent of white or pale grey in remiges reduced (adult ♂ has clear-cut and purer white on the inner webs—Figs. 10–11). **First-summer** Aged by more worn, browner, retained juvenile remiges, and primary-coverts, most of which usually still show the diagnostic small white tips, at least until April. Both sexes correspondingly less intensely glossed, with black areas especially of young ♀♀ even browner. Juvenile remiges have reduced white or pale grey, and especially young ♀♀ lack any visible white on inner webs of open upper wing (Figs. 13–14). Some first-summer ♂♂ also lack visible white on the spread upper wing, but most have some visible, even approaching that in adult ♀. **AUTUMN Adult** Evenly very fresh wings without discernible moult limits; primary tips fresh or, at most, slightly worn, and primary-coverts only slightly worn, blacker and glossier, and lack bold white tips of first-winters. Plumage and amount of white on inner webs to remiges generally as spring adults. **First-winter** (Fig. 19) Similar to adult, but has diagnostic bold white tips to primary-coverts, while those with retained juvenile alula and tertials also have contrasting bold white tips (reduced with wear). Slightly to moderately worn pale primary tips, and moult limits with less intense black (or browner) and looser juvenile greater coverts (if retained). Rest of plumage and amount of white on remiges generally as first-summers. **Juvenile** Very distinctive compared to juvenile *lugens* or *persica*, being generally smoky and browner overall, with grey-brown upperparts and dusky buff-brown underparts, often with darker or even blacker ear-coverts and bib, and warmer buff wing fringes (see Khoury *et al.* 2010).

## Appendix 2: summary of geographical variation in Mourning Wheatears of North Africa and the Middle East

Geographical variation in those members of the *O. lugens* complex breeding in North Africa and the Middle East (excluding southern Arabia) is marked. All the following taxa are consistently identifiable, with no

Figure 22. Distribution of the *Oenanthe lugens* complex in North Africa and the Middle East (excluding southern Arabia) (Magnus Ullman) showing breeding ranges and some movements, and with approximate boundaries between subspecies (broken lines). Considerably uncertainty and gaps in our knowledge exist meaning that some elements of the map should be viewed as tentative. Green = breeding; blue = wintering; arrows depict possible direction of migration by *O. l. persica*. The range of *O. l. warriae* is marked in red on the main map (enlarged at left) and is roughly based on the few published records, together with knowledge of its habitat requirements.

Notes. (1) Large '?' in Syria reflects the confusion surrounding which taxon breeds there; traditionally, this has been assumed to be *O. l. lugens*, but we have found evidence that *O. l. persica* occurs there, although its temporal status is unclear (see Future research). (2) Small '?' in eastern Lebanon: Porter & Aspinall (2010) indicated that the range of *O. lugens* covers most of Lebanon to the Mediterranean coast, but this seems erroneous (perhaps reflecting former confusion with Finsch's Wheatears *O. finschii*). However, in the drier areas of easternmost Lebanon, *lugens* could breed or occur in winter. (3) Arrows mark possible dispersal of *O. l. persica*, but only the Iranian population is known to be migratory, mostly to eastern Arabia. We have found evidence to suggest that *persica* winters west to Israel and Sinai (several specimens in Tel Aviv University Zoological Museum). It is unclear if these are from Iran (see note 1). (4) Border between *O. l. halophila* and *O. l. lugens* in Egypt remains to be elucidated. Extensive research in the area from the Nile to eastern Libya is needed, to elucidate whether intermediate populations of these two distinctive taxa exist as claimed.

documented evidence of possible overlap or interbreeding. For now, the four are conservatively maintained as subspecies, until such time as definitive evidence of specific status for some or all taxa becomes available. The following is based on specimens at BMNH, AMNH and the Tel Aviv University Zoological Museum, and summarises information prepared for Shirihai & Svensson (in press), Shirihai *et al.* (in prep.) and Roselaar & Shirihai (in prep.).

The most useful characters are the degree of sexual dimorphism, pattern and extent of white in the remiges, the extent of the buffy / rufous undertail-coverts, the size of the white rump, and the existence of polymorphism (only obvious in female *halophila*). To some degree the forms are also differentiated by biometrics and wing formula. See also Fig. 22 for further details concerning the distribution of each taxon.

***O. l. lugens*** (eastern Egypt, north-west Saudi Arabia, Israel and Jordan, but the taxon in Syria requires further investigation—see Further research), like *O. l. persica* (but unlike *O. l. halophila*) both sexes are virtually identical and black and white; the pinkish-buff to rufous undertail-coverts and whitish wing panel are well developed. In adults, the white bases to the inner webs are broad and reach closer to the shafts, and the border with the dark fields less steeply angled (more step-like—on p2 and p3 closer to the shaft, at least 10 mm above primary-coverts), forming more solid white flashes (Fig. 17). However, considerable age-related variation exists, with first-years having, on average, narrower white bases that often do not reach close to the shafts and can even lack the step-like pattern, to the extent of appearing identical to *persica* in this respect. Females, of respective ages, have on average smaller areas of white, but variation renders this unreliable for sexing. Reliable separation of *lugens* vs. *persica* outside the breeding season / regions should hinge on the white wing pattern only in adult males and use other clues, e.g. tail-band width and wing length, as well as p1 in relation to the tips of the primary-coverts and p2 (see Table 1). Exposed white base to p1 rather extensive and usually well defined. Wing ♂ 94–98 mm ($n$ = 10, mean 96.1), ♀ 89–94 mm ($n$ = 6, mean 90.8); tail ♂ 61–68 mm ($n$ = 7, mean 64.6), ♀ 58–62 mm ($n$ = 4, mean 58.6); bill (both sexes) 17.6–19.7 mm ($n$ = 25, mean 18.45).

***O. l. halophila*** (Morocco to north-west Egypt, although permanent breeding range in north-west Egypt requires confirmation) is unique within the group in showing strong sexual dimorphism, with females being generally duller grey-brown (resembling female *O. finschii*), but males are black and white (for rare darker females, see below). Pinkish-buff undertail-coverts and whitish panel in wing strongly reduced compared to

*O. l. lugens*. Colour of undertail-coverts patch highly variable in both sexes, from pinkish white or cream-buff to pale orange / rufous-buff, whilst white flashes ragged, concentrated on secondaries and inner primaries, and narrower (on inner webs usually not reaching shafts). Wing ♂ 89–97 mm ($n$ = 17, mean 91.8), ♀ 85–90 mm ($n$ = 14, mean 87.8); tail ♂ 54–63 mm ($n$ = 17, mean 57.9), ♀ 54–60 mm ($n$ = 14, mean 56.5); bill (both sexes) 17.1–19.3 mm ($n$ = 31, mean 18.3). Females can show a dark throat, and are highly variable in darkness of neck-sides and wings, with some extremely dark birds perhaps only sexed correctly by their greyish-brown back. Förschler *et al.* (2010) found rather low genetic divergence (0.2–1.0%) between nominate *lugens* and *halophila*, suggesting their retention together. Guichard (1955) reported that of four females collected in Tripolitania, Libya, one was typical pale *halophila*, but two others were principally male-like, while the fourth seemed intermediate between male and female plumage. Apparently similar intermediates reported from Egypt by Baha el Din & Baha el Din (2000), who also reported birds with *halophila*-like plumage but with extensive white in wing like *O. l. lugens*. However, neither of these references acknowledged the extreme variation in female *halophila* described above. Baha el Din & Baha el Din (2000) confirmed the lack of overlap in breeding ranges of *halophila* and *lugens* in Egypt, which are separated by the Nile (and even suggested that they favour different habitats). *O. l. halophila* is constant in its plumage characteristics and clear sexual differences exist across its range. Vocally, too, *halophila* and *lugens* clearly differ (Shirihai & Svensson in press).

***O. l. persica*** (north-east Iraq and Iran) is essentially a migrant breeder, moving as far as south-west Arabia in winter, but is rather subtly differentiated from *lugens*, except by the following. Black tail-band broader, with width of black at shaft 14–23 mm, but mostly >17 mm (Table 1). White on bases of inner webs of remiges substantially reduced, narrow and pointed, separated very steeply from dark fields, with division on pp2–3 ending approximately in line with primary-coverts or well below this. Thus white bases never reach very close to shafts (or form 'step-like' pattern of *lugens*) on exposed primaries, and consequently also has much more ragged white flashes in flight. (Beware of some variation in *lugens*; see above.) White bases to rest of remiges reduced, short, or often greyer and ill defined, and exposed white base on p1 small, ill defined or lacking. The black 'bib' tends to appear broader and may extend further onto the upper breast, while in fresh plumage the cap is often more brownish (sometimes almost dusky or blackish brown), but there is extensive individual variation in both these. Undertail-coverts similar to *lugens* or paler rufous, but much variation and overlap. Overall larger with more pointed wing. Wing ♂ 89–98 mm ($n$ = 12, mean 94.9), ♀ 88–98 mm ($n$ = 11, mean 92.2); tail ♂ 59.5–65.0 mm ($n$ = 12, mean 63.5), ♀ 57–64 mm ($n$ = 11, mean 60.5); bill (both sexes) 17.2–20.6 mm ($n$ = 23, mean 18.8).

***O. l. warriae*** (north-east Jordan and southern Syria) is almost solely black above and below. The only white areas are rump, lower ventral region, upper- and undertail-coverts, and tail feathers except inverted blackish 'T'. Latter pattern recalls previous two taxa, but subterminal band broad, approaching *persica* (14.5–19.0 mm wide along shaft of r6). Unlike any other member of the *lugens* complex it lacks rufous undertail-coverts, which are essentially white or tinged pale sandy cream, dusky white or pale greyish, probably due to soil discoloration. White rump patch very restricted, only ⅔ to ½ that of *lugens*, and only *c.* ⅔ that of *persica*. Strongly reduced white in bases to remiges, but pattern generally approaches that of *persica*. Only in adult males, which have most white, is the amount substantial and visible though still narrow and at most forms ragged flashes in flight. In young, especially females, the white is absent or nearly so, with a greyish translucence in some lights. Thus, even in adult male *warriae* the white areas are far narrower than in a young female *lugens* or than most *persica*. Wing more pointed, also approaching *persica*, including very short p1, which is dark greyish below (lacking white tip or basal area of other taxa). Virtually identical to male *O. picata opistholeuca* (especially young females with no visible white in wing) and often reliably separated only using wing structure and formula. Wing ♂ 97–99 mm ($n$ = 3, mean 98.3), ♀ 92.0–92.5 mm ($n$ = 3, mean 92.2); tail ♂ 64.5–65.0 mm ($n$ = 3, mean 64.8), ♀ 62–65 mm ($n$ = 3, mean 63.2); bill (both sexes) 18.0–19.5 mm ($n$ = 6, mean 18.5).

### Appendix 3: *O. l. warriae* assessed under the Tobias *et al.* (2010) guidelines

Tobias *et al.* (2010) established transparent guidelines for assessing species rank under a modern version of the Biological Species Concept. Readers are referred to that paper in considering the following. Conservatively, measured against geographically proximate *O. l. lugens*, *O. l. warriae* might score for the black, rather than white, crown and belly (3), lack of buffish-coloured undertail-coverts (3), reduced white in the primaries and rump, but broader tail-band (2), different biometrics and wing formula (1), and habitat preferences (1), giving a total of ten points (i.e. above the threshold seven points considered necessary to assign species rank under the Tobias *et al.* 2010 system). This ignores potential differences in vocals, which remain to be accurately elucidated, and the possibility that *lugens* and *warriae* occur in parapatry, as this is also undetermined. For now, we can be sure only that *lugens* and *warriae* select different habitats and that inter-breeding must be unquestionably rare, given that there are no documented examples of mixed pairs between these two. Despite the results of this scoring, we have assigned *warriae* subspecies rank in light of the fact that the taxonomy of the *O. lugens* complex requires further clarification, and due to its previous treatment as a colour morph.

© British Ornithologists' Club 2011

# The authorship and type locality of *Phalacrocorax carbo sinensis*

*by Jiří Mlíkovský*

*Received 23 May 2011*

Great Cormorant *Phalacrocorax carbo* (Linnaeus, 1758) is a common and widespread polytypic species of the Palearctic fauna. The continental subspecies, ranging from Western Europe to east and south-east Asia, is generally known under the name *sinensis* (Vaurie 1965, Dorst & Mougin 1979, Orta 1992, Johnsgard 1993).

The specific name *sinensis* has been often attributed to Shaw & Nodder (1802), where it appeared in the Latin text accompanying their plate 529 (unpaginated) in the binomen *Pelecanus sinensis* (e.g. Dresser 1903: 555, Hartert 1920: 1390, Peters 1931: 87), although Giebel (1877: 84) had previously attributed it to Latham (1801: lxx), an earlier source. For the dates of publication of Shaw & Nodder's work, see Sherborn (1895), Dickinson *et al.* (2006) and Peterson (2011). Sherborn (1924: 906) observed that the name had been used still earlier by Blumenbach (1798), in the text accompanying his plate 25 (unpaginated), also in the binomen *Pelecanus sinensis*. As a result, authorship has been widely accredited to Blumenbach in current ornithological literature (e.g. Vaurie 1965: 48, Dorst & Mougin 1979: 166, Dickinson 2003: 91). Dorst & Mougin (1979: 166) believed that *Pelecanus sinensis* of Blumenbach (1798) and of Shaw & Nodder (1802) were independent names and therefore homonyms.

I should also point out that *Pelecanus sinensis* of Turton (1800: 351) antedates Shaw & Nodder's (1802) use of this name, but I have found no authority that attributes the name to Turton (1800).

My search of literature now reveals that the species was described still earlier than currently understood. Both Shaw & Nodder (1802) and Blumenbach (1798) referred in their descriptions to earlier sources. Shaw & Nodder (1802: English text accompanying pl. 529) referred to 'Staunton's Chinese Embassy, 2. p. 388', and Blumenbach (1798: text accompanying pl. 25) described the bird 'nach den Nachrichten [...], die in der prachtvollen Reisebeschreibung der neulichen englischen Gesandschaft nach Schina [...] gegeben worden'. This, in translation, states: 'on the basis of reports presented in the splendid travelogue of the recent English embassy to China'. In addition, Shaw (1809: 243) remarked that the species was 'described and figured in Sir G. Staunton's Embassy to China'. All of these citations refer to the Macartney Embassy, headed by George Macartney (1737–1806), British politician, which ran from 1792–94 (Robbins 1908, Cranmer-Byng 1958, 1962).

The official and most comprehensive travelogue resulting from the Macartney Embassy was written by George Staunton (1737–1801), Irish-born and French-educated British Jesuit priest, physician, naturalist and diplomat, who participated in the Macartney Embassy (Reed & Demattè 2007: 156). The work was published in 1797 in a two-volume quarto edition (Staunton 1797a,b) and a three-volume octavo edition (Staunton 1797c,d,e). In addition, a folio atlas (Staunton 1796), with 44 maps and plates, was published on 12 April 1796 (British Library 2011). See Cranmer-Byng (1962) for other first-hand accounts of this Embassy.

The atlas (Staunton 1796: pl. 37) contains a detailed, full-page drawing of a juvenile Great Cormorant, copies of which appeared both in Blumenbach (1798: pl. 25) and Shaw & Nodder (1802: pl. 529). Staunton's pl. 37 bears the inscription 'The *Pelicanus* [sic] *sinensis*

or Fishing Corvorant [*sic*] of China' (my italics). The name appeared also in the chapter entitled 'A list of plates contained in the folio volume' in Staunton (1797b: xxvii), where it was accompanied by a detailed description, and in Staunton (1797e: 242) without description. A binominal name published before 1931 in association with an illustration is available for nomenclatural purposes (Art. 12.2.7 of ICZN 1999). The atlas was published prior to the text volumes of Staunton's work (see above), and the specific name *sinensis* thus dates from that work in 1796.

Staunton (1797b: 388) published an account of the morphological characteristics of the cormorant (in quotation marks), describing the bird as 'a species of the pelican, resembling the common corvorant', not using a Latin name, He also attributed the species to Shaw, remarking that Shaw 'has distinguished' the form on the basis of 'a specimen submitted [to him]'. 'Doctor Shaw', i.e. George Shaw (1751–1813), English naturalist and author of the *Naturalists' miscellany*, thus may have suggested to Staunton that the cormorant brought by the latter from China was specifically different from the British cormorant and probably provided the morphological diagnosis. However, there is no evidence that he coined the name *sinensis*. On the contrary, the absence of this name from the book section where Staunton (1797b) published Shaw's description and the fact that Shaw & Nodder (1802: Latin text associated with their pl. 529) stated 'auctor est Dominus Stauntonus' ('the author is Mr Staunton') indicate that the authorship of the name in the sense of the *International code of zoological nomenclature* (ICZN 1999: Art. 50.1) should be credited to Staunton.

Staunton (1796: pl. 37) published the specific name in combination with the generic name *Pelicanus*. He used the latter spelling also in another place in his travelogue (Staunton 1797b: xxvii), but there is no evidence that he deliberately emended the *Pelecanus* of Linnaeus (1758: 132). His *Pelicanus* should thus be considered an incorrect subsequent spelling, which, being not in prevailing use, has no standing in zoological nomenclature (Art. 33.3 of ICZN 1999).

The specimen 'submitted' by Staunton to Shaw (see above) can be regarded as the holotype of *Pelecanus sinensis* in the absence of any evidence to the contrary. Its current whereabouts is unknown and it has probably perished. Shaw's bird collection was deposited in the British Museum of Natural History (now the Natural History Museum at Tring) (Steinheimer 2003: 54), but no matching specimen appears to have survived (Ogilvie-Grant 1898).

The type locality of *Pelecanus sinensis* was given simply as 'China' by Staunton (1796: pl. 37, 1797b: xxvii), Blumenbach (1798: text accompanying pl. 25) and Shaw & Nodder (1802: text accompanying pl. 529). 'China' has been listed as the type locality of *P. sinensis* in standard modern references as well (e.g. Vaurie 1965: 48, Dorst & Mougin 1979: 166). Staunton (1797a: 335, 1797c: 381) mentioned that the Macartney Embassy first briefly encountered cormorants ('that celebrated bird, vulgarly called the pelican of the wilderness') in the Turon Bay in Cochin-China (now Da-Nang Bay, Vietnam; *c.*10°06'N, 108°11'E). However, a more detailed account of cormorants is found in a section describing the voyage through the Grand Canal from Beijing south, when the Macartney Embassy crossed the 'lake Wee-chaung-hoo' (Staunton 1797b: 388 ff., 1797e: 242ff.), i.e. Lake Weishan. Staunton (1797b: 388, 1797e: 242) mentioned that this was 'the place where the Leu-tze, or famed fishing bird of China, is bred, and instructed in the art and practice of supplying his owner with fish in great abundance'. I have found no other places in Staunton's travelogue where cormorants were mentioned. Although direct evidence is lacking, I consider it highly probable that the holotype brought by the Macartney Embassy to Europe originated from this lake. Staunton's (1797b,e) itinerary (see also Barrow 1804; John Barrow, 1764–1848, English politician, also participated in the Macartney Embassy to China) indicates that the

Macartney Embassy obtained the bird there in November 1793. Considering these data I restrict here the type locality of *Pelecanus sinensis* to Lake Weishan, Shandong Province, China (*c*.35°00′N, 116°50′E).

In summary, I conclude that *Pelecanus sinensis* was described by Staunton (1796: pl. 37) from a single specimen obtained by the Macartney Embassy to China in November 1793 at Lake Weishan, China. The subspecies authorship thus becomes *Phalacrocorax carbo sinensis* (Staunton, 1796).

**Acknowledgements**

This paper was supported in part by grants from the Ministry of Culture of the Czech Republic (MK DE06P04OMG008 and MK 00002327201). I thank Edward Dickinson, Guy Kirwan, Richard Schodde and Frank Steinheimer for comments on the submitted manuscript.

References:

Barrow, J. 1804. *Travels in China, containing descriptions, observations, and comparisons, made and collected in the course of a short residence at the Imperial palace of Yuen-Min-Yuen, and on a subsequent journey through the country from Pekin to Kanton.* D. Cadell & W. Davies, London.

Blumenbach, J. F. 1798. *Abbildungen naturhistorischer Gegenstände*, vol. 3. Johann Christian Dieterich, Göttingen.

British Library. 2011. [Record of Staunton 1796]. http://catalogue.bl.uk/F/S6JL3RRSU42P72NPX7INTM89VPAXH44JUEYGAAL7FXAJ3VFJ6R-04194?func=full-set-set&set_number=047714&set_entry=000117&format=999 (accessed 30 April 2011).

Cranmer-Byng, J. L. 1958. Lord Macartney's embassy to Peking in 1793. *J. Oriental Stud.* 4: 117–187.

Cranmer-Byng, J. L. 1962. *An embassy to China (Journal kept by Lord Macartney 1793–94).* Longmans, London.

Dickinson, E. C. (ed.) 2003. *The Howard and Moore complete checklist of the birds of the world.* Third edn. Christopher Helm, London.

Dickinson, E. C., Bruce, M. D. & Dowsett, R. J. 2006. *Vivarium naturae* or *The naturalist's miscellany* (1789–1813) by George Shaw: an assessment of the dating of the parts and volumes. *Arch. Nat. Hist.* 33: 322–343.

Dorst, J. & Mougin, J.-L. 1979. Order Pelecaniformes. Pp. 155–193 *in* Mayr, E. & Cottrell, G. W. (eds.) *Check-list of birds of the world*, vol. 1. Second edn. Mus. Comp. Zool., Cambridge, MA.

Dresser, H. E. 1903. *A manual of Palaearctic birds*, vol. 2. Privately published, London.

Giebel, C. G. 1877. *Thesaurus ornithologiae*, vol. 3. F. A. Brockhaus, Leipzig.

Hartert, E. 1920. *Die Vögel der paläarktischen Fauna*, Bd. 2(5–6). R. Friedländer und Sohn, Berlin.

International Commission on Zoological Nomenclature (ICZN). 1999. *International code of zoological nomenclature.* Fourth edn. The International Trust for Zoological Nomenclature, c/o The Natural History Museum, London.

Johnsgard, P. A. 1993. *Cormorants, darters, and pelicans of the world.* Smithsonian Institution Press, Washington DC.

Latham, J. 1801. *Supplement II to the General synopsis of birds.* Leigh, Sotheby & Son, London.

Linnaeus, C. 1758. *Systema naturae*, vol. 1. Tenth edn. Laurentius Salvius, Holmia.

Ogilvie-Grant, W. R. 1898. Steganopodes (cormorants, gannets, frigate-birds, tropic-birds, and pelicans), Pygopodes (divers and grebes), Alcae (auks), and Impennes (penguins). Pp. 329–653 *in Catalogue of the birds in the British Museum*, vol. 26. Trustees of the Brit. Mus. (Nat. Hist.), London.

Orta, J. 1992. Family Phalacrocoracidae (cormorants). Pp. 326–353 *in* del Hoyo, J., Elliott, A. & Sargatal, J. (eds.) *Handbook of the birds of the world*, vol. 1. Lynx Edicions, Barcelona.

Peters, J. L. 1931. *Check-list of birds of the world*, vol. 1. Harvard Univ. Press, Cambridge, MA.

Peterson, A. P. 2011. Zoonomen nomenclatural data. http://www.zoonomen.net (accessed 1 May 2011).

Reed, M. & Demattè, P. (eds.) 2007. *China on paper: European and Chinese works from the late sixteenth to the early nineteenth centuries.* Getty Research Institute, Los Angeles.

Robbins, H. H. 1908. *Our first ambassador to China: an account of the life of George, Earl of Macartney.* John Murray, London.

Shaw, G. 1809. *Zoological lectures delivered at the Royal Institution in the years 1806 and 1807*, vol. 1. George Kearsley, London.

Shaw, G. & Nodder, F. P. 1802. *The naturalists' miscellany*, vol. 13. [Publisher and place of publication not given.]

Sherborn, C. D. 1895. On the dates of Shaw and Nodder's 'Naturalist's Miscellany'. *Ann. Mag. Nat. Hist.* (6)15: 375–376.

Sherborn, C. D. 1924. *Index animalium*, vol. 2(4). Trustees of the Brit. Mus. (Nat. Hist.), London.

Staunton, G. 1796. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 3. Atlas. G. Nicol, London.

Staunton, G. 1797a. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 1. Quarto edn. G. Nicol, London.
Staunton, G. 1797b. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 2. Quarto edn. G. Nicol, London.
Staunton, G. 1797c. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 1. Octavo edn. G. Nicol, London.
Staunton, G. 1797d. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 2. Octavo edn. G. Nicol, London.
Staunton, G. 1797e. *An authentic account of an embassy from the King of Great Britain to the Emperor of China*, vol. 3. Octavo edn. G. Nicol, London.
Steinheimer, F. D. 2003. The whereabouts of pre-nineteenth century bird specimens. *Zool. Med. Leiden* 79: 45–67.
Turton, W. 1800. *A general system of nature through the three grand kingdoms of animals, vegetables and minerals*, vol. 1. Lackington, Allen & Co., London.
Vaurie, C. 1965. *The birds of the Palearctic fauna. Non-Passseriformes*. H. F. & G. Witherby, London.

*Address*: Dept. of Zoology, National Museum, Václavské náměstí 68, CZ-115 79 Praha 1, Czech Republic, e-mail: jiri_mlikovsky@nm.cz

© British Ornithologists' Club 2011

# First description of the nest and egg of Orange-crowned Fairy-wren *Clytomyias insignis*, from the southern highlands of Papua New Guinea

*by Iain A. Woxvold & Francis H. J. Crome*

*Received 25 May 2011*

The fairy-wrens and allies (Maluridae) comprise an Australo-Papuan family of small to mid-sized, predominantly insectivorous, passerines that frequent shrubby vegetation, grasslands and forest undergrowth (Rowley & Russell 1997, 2007). Two subfamilies are recognised: the Malurinae (fairy-wrens and emu-wrens), with 17 species in Australia and New Guinea; and the Amytornithinae (grasswrens), with ten species confined to Australia (Rowley & Russell 2007, Christidis & Boles 2008). Members of this family are highly social and live in sedentary, multi-member groups that remain together year-round. Cooperative breeding, where more than two individuals contribute to raise the young at a single nest (Brown 1987, Cockburn 1998), has been confirmed in most species where sufficient data exist (Higgins *et al.* 2001, Rowley & Russell 2007). These communal habits have made them a favoured subject of research, with some *Malurus* fairy-wrens among the most intensively studied of all Australian birds.

The situation is altogether different in New Guinea, where basic information on the ecology and breeding biology of the island's five endemic malurids remains piecemeal (Coates 1990, Rowley & Russell 2007).

The monotypic Orange-crowned Fairy-wren *Clytomyias insignis* is endemic to mainland New Guinea where it is widespread, albeit local and uncommon, in montane forest at 1,700–3,000 m (Diamond 1972, Coates 1990, Rowley & Russell 1997). It favours dense vegetation in the forest understorey or at the forest edge, where this fairy-wren gleans insects from foliage and feeds on the ground (Bell 1969, Diamond 1972, Coates 1990, Frith & Frith 1992).

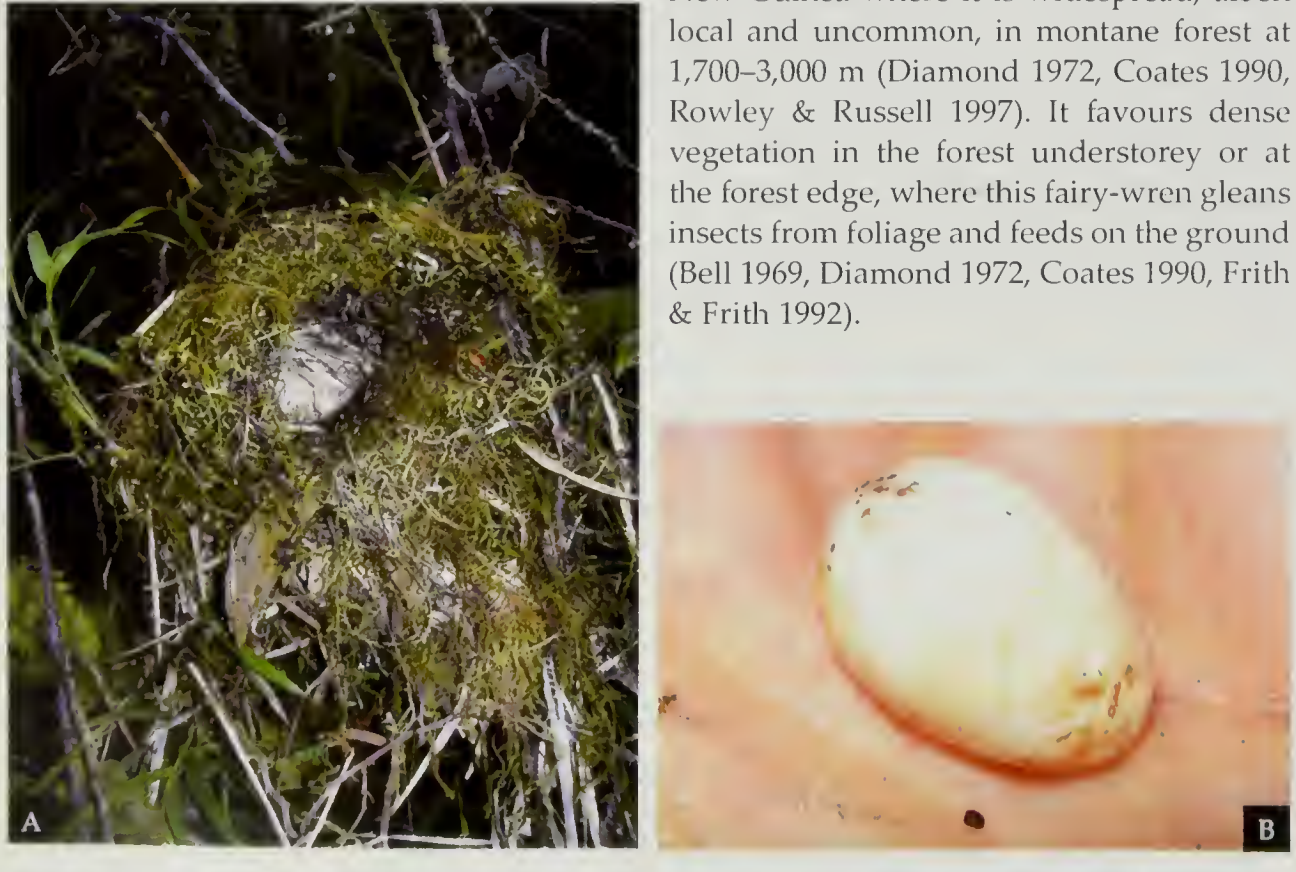


Figure 1. Nest (A) and egg (B) of Orange-crowned Fairy-wren *Clytomyias insignis*, Hides Ridge, Southern Highlands Province, Papua New Guinea, April 2005 (Iain Woxvold)

Of breeding virtually nothing is known. *Clytomyias* has regularly been observed in groups of more than two (Frith & Frith 1992, Davies 2008), and sometimes in parties of up to seven birds (Bell 1969), consistent with the notion that it may breed cooperatively. Internal examination has indicated breeding condition in birds collected at various localities across the central cordillera (e.g., Mayr & Gilliard 1954, Ripley 1964), including a female that 'contained two nearly formed eggs' (Diamond 1972: 217). Here we provide the first description of the nest and eggs of *Clytomyias*.

In 2005 we surveyed birds on Hides Ridge (05°56.9'S, 142°44.7'E), part of a limestone range rising nearly 1,000 m above the Tagari River valley and located *c*.25 km west-southwest of Tari in the Southern Highlands Province of Papua New Guinea. Habitat consisted of primary montane *Nothofagus* moss forest overlying karst terrain with numerous sinkholes. Extensive thickets of climbing bamboo *Nastus productus* were present on hilltops and ridges.

On the afternoon of 25 April, while investigating a small (*c*.5 m diameter) swampy pool at the base of a sinkhole depression (at *c*.2,150 m), our attention was drawn to an area near the foot of the slope by a continuous series of harsh, scolding calls. Viewing the area from 5–7 m distance we noticed a *Clytomyias insignis* at the entrance of a domed nest. Calling persisted for some minutes while the bird looked into but did not enter the nest, and then continued from within the nest after the bird had left. The calls were recorded and can be examined at xeno-canto (www.xeno-canto.org/asia/; XC64640). As we approached the nest, a second bird emerged and flew into the forest upslope.

The nest (Fig. 1A) was placed *c*.0.8 m above steep sloping ground in a shrubby vine *Parsonsia sanguinea* situated *c*.2–3 m above the sinkhole floor and a similar distance from the forest edge at its boundary with the swampy pool. The nest framework was constructed predominantly of interwoven *P. sanguinea* leaves and decorated with live moss which covered the exterior of the nest and hung from its base to form a 'beard' of *c*.15 cm. Moss has been reported among materials used by a number of tropical malurines (Rowley & Russell 1997), including some New Guinea species (Ripley 1964, Diamond 1981), and may serve a dual purpose of water-proofing and camouflage. The exterior of the main structure measured *c*.16 × 12 cm (width × depth), these dimensions being taken at the nest's widest plane and at the perpendicular. The entrance measured *c*.6 × 4 cm (width × height), was located centrally in the nest wall and faced away from the slope and towards an edge of the clearing above the sinkhole pool. A slight hood projected above the entrance, a character noted in many other malurid nests, and in this case at least partially attributable to the trampling of its lower edge by regular visits. The nest was positioned at an angle of *c*.40° to the horizontal, the pattern of trampling at the entrance rim suggesting it may have tilted following recent disturbance.

The nest contained two eggs. One was removed and photographed (Fig. 1B) before we left the area. The egg was of long subelliptical shape, matte white with small pinkish-brown splotches restricted (or nearly so) to the base of the blunt end. Overall colour and the distribution of markings are similar to other malurine eggs (Schodde 1982, Rowley & Russell 1997). Although more sparsely marked than most other malurine eggs, more examples are needed to determine whether this is the norm.

On returning the following morning to document the clutch in more detail, the nest was empty and the birds could not be located. The cause of failure was not determined, though abandonment seemed probable as the nest remained intact and no shell fragments or feathers were found. Following our visit, the nest area was subject to additional traffic as a walking track was established that led past the sinkhole pool.

The egg pictured is conservatively estimated to measure 20.5–21.8 mm long and 14.0–15.0 mm wide at its broadest point. Dimensions were measured indirectly by calculating

the distance between dermal ridges on the hand photographed (three measures taken). The *Clytomyias* egg is appreciably larger than those known to date from all other malurines, the largest heretofore being the eggs of Superb Fairy-wren *Malurus cyaneus* (at 16–19 mm × 12–14 mm), and within the range of those laid by the larger amytornithines (Rowley & Russell 1997). Egg size increases with body mass in malurids (Rowley & Russell 1997) as in other birds (Rahn *et al.* 1975). Of those malurines whose eggs have been described, *Clytomyias* is the heaviest (at 10–14 g) and most similar in body mass to *M. cyaneus* (at 9–14 g) (Rowley & Russell 2007). The eggs of Broad-billed Fairy-wren *M. grayi* and Emperor Fairy-wren *M. cyanocephalus*, both from New Guinea, are yet to be described. These are the heaviest of all malurines and their eggs may yet prove proportionately superior.

Most malurids lay 2–4 eggs (Rowley & Russell 2007). In this case the final clutch size could not be determined.

While most malurines are strongly sexually dimorphic, male and female *Clytomyias* are indistinguishable in size and plumage (Rowley & Russell 2007), and it was not possible to determine the sex of the attendant adults. As only two birds were seen, cooperative breeding in this instance was neither confirmed nor denied.

**Acknowledgements**

We are grateful to W. Takeuchi for providing plant identifications, T. Mamu, G. Richards, S. Richards and W. Takeuchi for their assistance and company in the field, ExxonMobil Corporation for their logistical and financial support, and local Huli residents for their assistance in the field and permission to work on their land. Eleanor Rowley and Bruce Beehler provided valuable comments on the submitted version.

References:

Bell, H. L. 1969. Field notes on the birds of the Ok Tedi River drainage. *Emu* 69: 193–211.

Brown, J. L. 1987. *Helping and communal breeding in birds: ecology and evolution*. Princeton Univ. Press.

Christidis, L. & Boles, W. E. 2008. *Systematics and taxonomy of Australian birds*. CSIRO Publishing, Melbourne.

Coates, B. J. 1990. *The birds of Papua New Guinea, including the Bismarck Archipelago and Bougainville*, vol. 2. Dove Publications, Alderley.

Davies, C. 2008. Mount Trikora, Snow Mountains, West Papua, Indonesia 2–17 July 2007. *Muruk* 9: 41–47.

Cockburn, A. 1998. Evolution of helping behavior in cooperatively breeding birds. *Ann. Rev. Ecol. & Syst.* 29: 141–177.

Diamond, J. M. 1981. Distribution, habits and nest of *Chenorhamphus grayi*, a malurid endemic to New Guinea. *Emu* 81: 97–100.

Diamond, J. M. 1972. *Avifauna of the eastern highlands of New Guinea*. Publ. Nuttall Orn. Cl. 12. Nuttall Orn. Cl., Cambridge, MA.

Frith, C. B. & Frith, D. W. 1992. Annotated list of birds in western Tari Gap, Southern Highlands, Papua New Guinea, with some nidification notes. *Australian Bird Watcher* 14: 262–276.

Higgins, P. J., Peter, J. M. & Steele, W. K. (eds.) 2001. *Handbook of Australian, New Zealand and Antarctic birds*, vol. 5. Oxford Univ. Press, Melbourne.

Mayr, E. & Gilliard, E. T. 1954. Birds of central New Guinea. Results of the American Museum of Natural History Expeditions to New Guinea in 1950 and 1952. *Bull. Amer. Mus. Nat. Hist.* 103: 311–374.

Rahn, H., Paganelli, C. V. & Ar, A. 1975. Relation of avian egg weight to body weight. *Auk* 92: 750–765.

Ripley, S. D. 1964. A systematic and ecological study of birds of New Guinea. *Peabody Mus. Nat. Hist., Yale Univ. Bull.* 19: 1–87.

Rowley, I. & Russell, E. 1997. *Fairy-wrens and grasswrens*. Oxford Univ. Press.

Rowley, I. & Russell, E. 2007. Family Maluridae (fairy-wrens). Pp. 490–531 *in* del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 12. Lynx Edicions, Barcelona.

Schodde, R. 1982. *The fairy-wrens: a monograph of the Maluridae*. Lansdowne, Melbourne.

*Addresses*: Iain A. Woxvold, Dept. of Zoology, University of Melbourne, Victoria 3010, Australia, e-mail: iainwoxvold@gmail.com. Francis H. J. Crome, P.O. Box 450, Clifton Hill, Victoria 3068, Australia.

© British Ornithologists' Club 2011

# Bulletin of the British Ornithologists' Club

Edited by Guy M. Kirwan

Index for Volume 131 (2011)

# LIST OF AUTHORS AND CONTENTS

ALBUQUERQUE FRANÇA, B. R. See SILVA, M.

ARAUJO, H. F. P. See RUIZ-ESPARZA, J.

ARETA, J. I., NORIEGA, J. I., PAGANO, L. & ROESLER, I. Unravelling the ecological radiation of the capuchinos: systematics of Dark-throated Seedeater *Sporophila ruficollis* and description of a new dark-collared form ..... 4

ARZUZA, D. See BONACCORSO, E.

ASCANIO, D. See MARANTZ, C. A.

BANKS, R. C. The type locality of the Olive Warbler (Peucedramidae) ..... 122

BAIRLEIN, F. See FÖRSCHLER, M. I.

BIRCH, D. See TATAYAH, R. V.

BØGH, R. See INGELS, J.

BOLES, W. See DUTSON, G.

BONACCORSO, E., ARZUZA, D., BUITRÓN-JURADO, G., CHARPENTIER, A. L., JUIÑA, M., PIEDRAHÍA, P. & FREILE, J. F. Range extensions and other noteworthy bird records from the Ecuadorian Andes ..... 261

BONIER, F. See GREENEY, H. F.

BRAMMER, F. P. See CLAESSENS, O.

BUDEN, D. W., WICHEP, J. & FAL'MNGAR, S. First record of Purple Swamphen *Porphyrio porphyrio* in the Federated States of Micronesia, with remarks on vagrants and recently established populations of rallids in Micronesia ..... 59

BUITRÓN-JURADO, G. Interesting distributional records of Amazonian birds from Pastaza, Ecuador ..... 241

BUITRÓN-JURADO, G. See BONACCORSO, E.

CAMACHO, C. & WILSON, R. E. New record of Cinnamon Teal *Anas cyanoptera* in Ecuador ..... 69

CARLOS, C. J. & VOISIN, J.-F. *Charadrius wilsonia brasiliensis* Grantsau & Lima, 2008, is a junior synonym of *Charadrius crassirostris* Spix, 1825 ..... 165

CHAMNAN, H. See HANDSCHUH, M.

CHARPENTIER, A. L. See BONACCORSO, E.

CIBOIS, A., THIBAULT, J.-C. & PASQUET, E. Molecular and morphological analysis of Pacific reed warbler specimens of dubious origin, including *Acrocephalus luscinius astrolabii* ..... 32

CLAESSENS, O., BRAMMER, F. P., DEVILLE, T. & RENAUDIER, A. First documented records of Pearly-breasted Cuckoo *Coccyzus euleri* for French Guiana, and an overlooked specimen from Ecuador ..... 128

CROME, F. H. J. See WOXVOLD, I. A.

DANIELS, B. E. See MARANTZ, C. A.

DAVID, N. & GOSSELIN, M. Gender agreement of avian species-group names under Article 31.2.2 of the ICZN Code ..... 103

DECHELLE, M. See INGELS, J.

DEMEY, R. See DOWSETT-LEMAIRE, F.

DEVILLE, T. See CLAESSENS, O.

DOWSETT-LEMAIRE, F., DEMEY, R. & DOWSETT, R. J. On the voice, distribution and habitat of Baumann's Greenbul *Phyllastrephus baumanni* ..... 154

DOWSETT, R. J. See DOWSETT-LEMAIRE, F.

DUTSON, G., GREGORY, P. & BOLES, W. Bismarck Crow *Corvus* (*orru*) *insularis* warrants species status ..... 204

ESTELA, F. A. See LÓPEZ-VICTORIA, M.

EVANS, T. D. See HANDSCHUH, M.

FAL'MNGAR, S. See BUDEN, D. W.

FERRARI, S. F. See RUIZ-ESPARZA, J.

FINCH, B. W. See TURNER, D. A.

FONTANA, C. S. See MÜLLER REBELATO, M.

FÖRSCHLER, M. I., SHAW, D. N. & BAIRLEIN, F. Deuterium analysis reveals potential origin of the Fair Isle Citril Finch *Carduelis citrinella* ..... 189

FREEMAN, B. See GREENEY, H. F.

FREILE, J. F. See BONACCORSO, E.

GELIS, R. A. See GREENEY, H. F.

GOSSELIN, M. See DAVID, N.

GRAVES, G. R. Status of wood rails (*Aramides*) in north-west Peru ..... 210

GREENEY, H. F. & JUIÑA J., M. E. First description of the nest of Undulated Antpitta *Grallaria squamigera*, from south-west Ecuador ..... 67

GREENEY, H. F., MARTIN, P. R., GELIS, R. A., SOLANO-UGALDE, A., BONIER, F., FREEMAN, B. & MILLER, E. T. Notes on the breeding of high-Andean birds in northern Ecuador ..... 24

GREGORY, P. See DUTSON, G.

GREGORY, S. M. S. The authorship of the generic name *Argusianus* ..... 206

HANDSCHUH, M., VAN ZALINGE, R. N., OLSSON, U., SAMPHOS, P., CHAMNAN, H. & EVANS, T. D. First confirmed record and first breeding record of Indian Spotted Eagle *Aquila hastata* in Indochina ..... 118

HARRIS, J. B. C. See MADIKA, B.

HARTMANN, P. A. See MÜLLER REBELATO, M.

HELBIG, A. J. See SHIRIHAI, H.

HUNTER, N. D. See TURNER, D. A.

INGELS, J., DECHELLE, M. & BØGH, R. Little Wood Rail *Aramides mangle*, a Brazilian endemic, found in French Guiana ..... 200

JANSEN, J. J. F. J. See LECROY, M.

JONES, C. G. See TATAYAH, R. V.

JUIÑA, M. See BONACCORSO, E.

JUIÑA J., M. E. See GREENEY, H. F.

KIRWAN, G. M. External characters suggest that Long-tailed Manakin *Chiroxiphia linearis* is monotypic ..... 76

KIRWAN G. M. Notes on the nests of five species in south-eastern Ecuador, including the first breeding data for Black-and-white Tody-Tyrant *Poecilotriccus capitalis* ..... 191

KIRWAN, G. M. See SHIRIHAI, H.

KROLL, O. See LÓPEZ-VICTORIA, M.

LEES, A. C. & VANDERWERF, E. A. First record of Blyth's Pipit *Anthus godlewskii* for Micronesia ..... 212

LEADER, P. J. Taxonomy of the Pacific Swift *Apus pacificus* Latham, 1802, complex ..... 81

LECROY, M. & JANSEN, J. J. F. J. Joannes Maximiliaan Dumas, bird collector in the East Indies and New Guinea ..... 171

LIMA HAGI, L. Y. G. See SILVA, M.

LÓPEZ-VICTORIA, M., KROLL, O. & ESTELA, F. A. Unusual offshore record of Snail Kite *Rostrhamus sociabilis* on Malpelo Island, Colombia, Eastern Tropical Pacific ..... 202

MADIKA, B., PUTRA, D. D., HARRIS, J. B. C., YONG, D. L., MALLO, F. N., RAHMAN, A., PRAWIRADILAGA, D. M. & RASMUSSEN, P. C. An undescribed *Ninox* hawk owl from the highlands of Central Sulawesi, Indonesia? ..... 94

MALLO, F. N. See MADIKA, B.

MARANTZ, C. A., ASCANIO, D. & DANIELS, B. E. First records of White-winged *Nyctibius leucopterus* and Rufous Potoos *N. bracteatus* in Venezuela ..... 41

MARTIN, P. R. See GREENEY, H. F.

MARÍN, M. On the breeding biology of Yellowish Flycatcher *Empidonax flavescens* in Costa Rica ..... 266

MILLER, E. T. See GREENEY, H. F.

MILLS, M. S. L. & VAZ, A. The nest and eggs of Margaret's Batis *Batis margaritae* ..... 208

MLÍKOVSKÝ, J. The authorship and type locality of *Phalacrocorax carbo sinensis* ..... 292

MÜLLER REBELATO, M., FONTANA, C. S., REPENNING, M. & HARTMANN, P. A. First documented record of Sharp-billed Canastero *Asthenes pyrrholeuca* in Brazil ..... 134

NETO, M. R. See SILVA, M.

NORIEGA, J. I. See ARETA, J. I.

NOTTON, D. G. The availability and validity of the name *Forpus flavicollis* Bertagnolio & Racheli, 2010, for a parrotlet from Colombia ..... 221

OLIVEIRA, D. V. See SILVA, M.

OLSSON, U. See HANDSCHUH, M.

PAGANO, L. See ARETA, J. I.

PASQUET, E. See CIBOIS, A.

PERRON, R. M. The taxonomic status of *Casuarius bennetti papuanus* and *C. b. westermanni* ..... 54

PICHORIM, M. See SILVA, M.

PIEDRAHÍA, P. See BONACCORSO, E.

PRAWIRADILAGA, D. M. See MADIKA, B.

PRŶS-JONES, R. P. Type specimens of the Imperial Woodpecker *Campephilus imperialis* (Gould, 1832) ..... 256

PUTRA, D. D. See MADIKA, B.

PYLE, P. Nomenclature of the Laysan Honeycreeper *Himatione* [*sanguinea*] *fraithii* ..... 116

RASMUSSEN, P. C. See MADIKA, B.

RAHMAN, A See MADIKA, B.

RENAUDIER, A. See CLAESSENS, O.

REPENNING, M. See MÜLLER REBELATO, M.

RIBEIRO, A. D. See RUIZ-ESPARZA, J.

ROCHA, P.A. See RUIZ-ESPARZA, J.

RODRÍGUEZ, A. See RODRÍGUEZ, B.

RODRÍGUEZ, B., SIVERIO, F., SIVERIO, M. & RODRÍGUEZ, A. Variable plumage coloration of breeding Barbary Falcons *Falco* (*peregrinus*) *pelegrinoides* in the Canary Islands: do other Peregrine Falcon subspecies also occur in the archipelago? ..... 140

ROESLER, I. See ARETA, J. I.

RUIZ-ESPARZA, J., ROCHA, P.A., RIBEIRO, A. D., FERRARI, S. F. & ARAUJO, H. F. P. Expansion of the known range of Tawny Piculet *Picumnus fulvescens* including the south bank of the São Francisco River in north-east Brazil ..... 217

SALAMOLARD, M. See TATAYAH, R. V.

SAMPHOS, P See HANDSCHUH, M.

SHAW, D. N. See FÖRSCHLER, M. I.

SHIRIHAI, H., KIRWAN, G. M. & HELBIG, A. J. A new taxon in the Mourning Wheatear *Oenanthe lugens* complex ..... 270

SILVA, M., ALBUQUERQUE FRANÇA, B. R., LIMA HAGI, L. Y. G., NETO, M. R., OLIVEIRA, D. V. & PICHORIM, M. New sites and range extensions for endemic and endangered birds in extreme north-east Brazil ..... 234

SIVERIO, F. See RODRÍGUEZ, B.

SIVERIO, M. See RODRÍGUEZ, B.

SOLANO-UGALDE, A. Notes on the distribution and natural history of bird species in the Chocó bioregion of Ecuador ..... 249

SOLANO-UGALDE, A. See GREENEY, H. F.

TATAYAH, R. V., JONES, C. G., BIRCH, D. & SALAMOLARD, M. First record of Réunion Black Petrel *Pseudobulweria aterrima* on Mauritius ..... 64

THIBAULT, J.-C. See CIBOIS, A.

TURNER, D. A., FINCH, B. W. & HUNTER, N. D. Remarks concerning the all-black coastal boubous (*Laniarius* spp.) of Kenya and southern Somalia ..... 125

VANDERWERF, E. A. See LEES, A. C.

VAN ZALINGE, R. N. See HANDSCHUH, M.

VAZ, A. See MILLS, M. S. L.

VOISIN, J.-F. See CARLOS, C. J.

WICHEP, J. See BUDEN, D. W.

WILSON, R. E. See CAMACHO, C.

WOXVOLD, I. A. & CROME, F. H. J. First description of the nest and egg of Orange-crowned Fairy-wren *Clytomyias insignis*, from the southern highlands of Papua New Guinea ..... 296

YONG, D. L. See MADIKA, B.

ZUCCON, D. Taxonomic notes on some Muscicapidae ..... 196

ZUCCON, D. A new name for the Montserrat Forest Thrush ..... 199

# INDEX TO SCIENTIFIC NAMES

All generic and specific names (of birds only) are indexed. New specific and subspecific names are indexed in bold print under generic, specific and subspecific names. Illustrations and figures are numbered in italics.


Acanthopneuste buruensis 186
Acanthopneuste floris 186
Accipiter bicolor 106
Accipiter cirrocephalus 183
Accipiter fasciatus 186
Accipiter guttifer 106
Accipiter novaehollandiae 186
Accipiter poliogaster 241, 243
Accipiter trinotatus 186
Acrocephalus aequinoctialis 36, *37*
Acrocephalus atyphus 32–36, *37*, *38*
Acrocephalus australis 36, *37*
Acrocephalus caffer 34–36, *37*, *38*, 39
Acrocephalus familiaris 36, *37*
Acrocephalus kerearako 36, *37*
Acrocephalus longirostris 34, 36, *37*, *38*
Acrocephalus luscinius 32–40, 35, 36, *37*
Acrocephalus mendanae 36, *37*, *38*
Acrocephalus musae 34–36, *37*, *38*, 39
Acrocephalus orientalis *37*
Acrocephalus percernis 34–36, *37*, *38*, 39
Acrocephalus rimitarae 36, *37*
Acrocephalus stentoreus *37*
Acrocephalus taiti 36, *37*
acuticauda, Apus 81, 87, 91, 92
addita, Microeca 186
additus, Rhinomyias 186
Aedicnemus vocifer 106
Aegotheles bennettii 103, 105, 106
Aegotheles plumifera 105, 106
aenea, Ducula 103, 105, 107
aeneus, Muscadivores 105, 107
aequinoctialis, Acrocephalus 36, *37*
aethiopicus, Laniarius 125, *126*, 161
aethiops, Thamnophilus 106
affinis, Ninox 99
Agelasticus xanthophthalmus 241, 247
Aglaeactis cupripennis 28
Agriornis montana 28
aguimp, Motacilla 107
Alauda chuana 109
Alauda (Megalophonus) plebeja 107
alba, Tyto 27
albiceps, Elaenia 28
albidiventris, Cinclodes 24
albigularis, Phyllastrephus 154, 161
albofasciata, Chersomanes 110
albosquamatus, Picumnus 106
Alca impennis 72
Alcedo amazona 109
alfredi, Otus 186
alfredi, Pisorhina 186
alpina, Muscisaxicola 24, 26
Amaurornis moluccanus 61
Amaurornis phoenicurus 62, 63, 108
Amaurospiza carrizalensis 42
amazona, Alcedo 109
amazona, Chloroceryle 109
Amazona mercenaria 107
Amazona mercenarius 103, 105
amazonum, Heteropelma 108, 109
amazonum, Urogalba 109
amazonus, Sittasomus 109
americanus, Coccyzus 129–132
Ammomanes deserti *273*, 284
Ammomanes phoenicura 108
Ampelion rubrocristatus 28
Ampelis cayana 111
analis, Formicarius 106
analoga, Ptilotis 107
Anas andium 27
Anas cyanoptera *69*, 69–71, *70*
Anas discors 70
Anas dominica 111
Anas penelope 42, 53
Ancistrops strigilatus 245
andicola, Grallaria 68
andicola, Leptasthenura 25
Andigena hypoglauca 28
andium, Anas 27
Andropadus gracilirostris 154
Andropadus virens 155
Androphilus disturbans 186
angustifrons, Psarocolius 244
anomala, Cossypha 197
anomalus, Caffrornis 197
anonymus, Cisticola 160
Anthipes submoniliger 106
Anthracothorax dominicus 111
Anthus bogotensis 29
Anthus campestris 214
Anthus godlewskii 212–217, *214*
Anthus hodgsoni 212
Anthus richardii 213
Anthus rufulus 214
Anthus trivialis 213
Aphelocoma unicolor 123
Apus acuticauda 81, 87, 91, 92
Apus cooki *88*, *89*, 92
Apus leuconyx *89*, 92
Apus pacificus 81–93, *85*, *86*
Apus salimali *88*, 92
Aquila chrysaetos 118, *119*, 120
Aquila clanga 118–120
Aquila hastata 118–122, *119*
Aquila heliaca 118, *119*, 120
Aquila nipalensis 118, *119*, *120*
Aquila pomarina 118, *119*, *120*
Aquila rapax 118, *119*, *120*
Aramides 210–212
Aramides axillaris 201, 211
Aramides cajanea 111, 201, 243
Aramides cajaneus 103, 114
Aramides mangle *200*, 200–202
Aramides wolfi 210, 211, 249, 250
Aramidopsis plateni 95
Aratinga pertinax 111, 112
archeri, Caffrornis 197

archeri, Cossypha 197
ardesiaca, Fulica 27
argentoratensis, Garrulus 110
Argus 206, 207
argus, Argusianus 207
Argus giganteus 206, 207
Argusianus 206, 207
Argusianus argus 207
argus, Phasianus 206, 207
armata, Merganetta 27
Asthenes pyrrholeuca *134*, 134–136, *135*
Asthenes wyatti 263
Ateleodacnis speciosa 109
aterrima, Pseudobulweria 64–66, *65*
Atlapetes latinuchus 264
Atlapetes pallidinucha 30
Atlapetes schistaceus 30
Atlapetes tricolor 261, 264
atrata, Fulica 61
atripennis, Phyllanthus 158
atropileus, Hemispingus 29
Attila phoenicurus 108
atyphus, Acrocephalus 32–36, *37*, *38*
auratus, Capito 244
aureliae, Haplophaedia 263
auriculata, Zenaida 27
australis, Acrocephalus 36, *37*
Automolus melanopezus 244
Automolus rufipileatus 244
axillaris, Aramides 201, 211
Bangsia edwardsi 253
baraui, Pterodroma 65
Barbatula coryphaea 108
barbatus, Pycnonotus 155
Basileuterus nigrocristatus 29
Batis margaritae 208–210, *209*
Batrachostomus moniliger 106
baumanni, Phyllastrephus 154–164, *159*, 161
bengalus, Fringilla 110, 111
bengalus, Uraeginthus 111
bennetti, Casuarius *56*
bennettii, Aegotheles 103, 105, 106
berlepschi, Crypturellus 249
beverlyae, Synallaxis 42
bicolor, Accipiter 106
bistriatus, Burhinus 106
Bleda canicapillus 156
blissetti, Dyaphorophyia 156
bogotensis, Anthus 29
bohemicus, Garrulus 110
Bombycilla garrulus 110
bonthaina, Ficedula 186
bonthaina, Siphia 186
boobook, Ninox 99
bouvreuil, Sporophila 5, 12, *20*
Brachypteryx floris 186
Brachypteryx montana 186
brachyura, Camaroptera 156
brachyura, Poecilodryas 186
bracteatus, Dicrurus 186
bracteatus, Nyctibius 41, 42, 46–51
Bradypterus castaneus 186
Bremus 207
bresilia, Tanagra 111
bresilius, Ramphocelus 111
brevirostris, Collocalia 92
Bubulcus ibis 243
Bucco tamatia 106
burhani, Ninox 94, 99
Burhinus bistriatus 106
buruensis, Acanthopneuste 186
buruensis, Erythromyias 186
buruensis, Ficedula 186
Buteo polyosoma 27
Buthraupis eximia 29
Buthraupis montana 29
Cacicus haemorrhous 247
Cacicus leucoramphus 30
caerulescens, Diglossa 261, 264
caerulescens, Sporophila 12
caeruleus, Cyanerpes 246
caffer, Acrocephalus 34–36, *37*, 39
caffer, Caffrornis 197
caffra, Cossypha 197
caffra, Motacilla 197
Caffrornis 197
Caffrornis anomalus 197
Caffrornis archeri 197
Caffrornis caffer 197
cajanea, Aramides 111, 201, 243
Cajanea, Fulica 111, 112, 114
cajaneus, Aramides 103, 114
Cajaneus, Turdus 112
Callene 197
Calliste lunigera 106
callonotus, Veniliornis 132
Calyptocichla serinus 103
Camaroptera brachyura 156
Camaroptera superciliaris 156
Campephilus gayaquilensis 132
Campephilus imperialis 256–260
campestris, Anthus 214
Canaria, Fringilla 110, 111
canaria, Serinus 111
canicapillus, Bleda 156
capensis, Zonotrichia 30, 246
capitalis, Poecilotriccus 191, 192, *193*
Capito auratus 244
Caprimulgus longirostris 27
Caprimulgus pectoralis 106
Caprimulgus ruwenzorii 106
Capsiempis flaveola 109
'caraguata', Sporophila 20
'caraguata', Sporophila 20
carbo, Phalacrocorax 292–295
Carduelis citrinella 189–191, *190*
Carduelis magellanica 30
carolina, Porzana 111
carolinus, Euphagus 111
carolinus, Melanerpes 111
carolinus, Picus 111
carolinus, Rallus 111
carolinus, Turdus 111
carrizalensis, Amaurospiza 42
carunculatus, Phalcoboenus 27
castaneiventris, Sporophila 5
castaneus, Bradypterus 186
castaneus, Pachyramphus 109

Casuarius bennetti 54–58, *56*
casuarius, Casuarius 54
Casuarius casuarius 54
Casuarius edwardsi 55
Casuarius goodfellowi 55
Casuarius papuanus 54–58
Casuarius unappendiculatus 54
Casuarius westermanni 54, 55, 58
Catamblyrynchus diadema 30
Catamenia inornata 30
Cataponera turdoides 186
cayana, Ampelis 111
cayana, Cotinga 111
cayana, Dacnis 111
cayana, Motacilla 111
cayana, Piaya 111, 244
cayana, Tanagra 111
cayana, Tangara 111
cayana, Tityra 111
cayanus, Charadrius 111
cayanus, Corvus 111
cayanus, Cuculus 111
cayanus, Cyanocorax 111
cayanus, Lanius 111
cayanus, Vanellus 111
cayelii, Strix 186
Celeus flavus 244
Cephalopterus penduliger 106
Cephenemyia phobifer 103
Cephenemyia phobifera 104
Cercomacra tyrannina 107
Cercotrichas coryphaeus 108
Certhilauda chuana 109
Certhilauda garrula 110
Chaetura martinica 111
chalcopterus, Pionus 132
Chalcostigma herrani 28
Chalcostigma stanleyi 28
Charadrius cayanus 111
Charadrius crassirostris 165–170, *166*, *168*
Charadrius Dominicus 111
Charadrius wilsonia 165–170
cheniana, Mirafra 109
cherina, Cisticola 109
cherina, Drymoica 109
Chersomanes albofasciata 110
chilensis, Tangara 195
chimborazo, Oreotrochilus 28
chiniana, Cisticola 109
chiniana, Drymoica 109
Chiroxiphia linearis 76–80, *77*, *78*
chloris, Halcyon 107
chloris, Todiramphus 107
chlorocephalus, Oriolus 106
Chloroceryle amazona 109
Chlorocharis squamiceps 186
Chlorocichla simplex 157
Chlorophonia flavirostris 253
chloropus, Gallinula 59, 61–63
chlororhynchos, Thalassarche 42
choliba, Megascops 105
choliba, Otus 103, 105, 106
Chordeiles gundlachii 107
Chordeiles virginianus 107
chrysaetos, Aquila 118, *119*, 120
chrysomelas, Phasianus 256
chuana, Alauda 109
chuana, Certhilauda 109
Cichlherminia 199
Cichlherminia lawrencii 199
Cichlherminia lherminieri 199
Ciconia crumenifera 105, 106
Cinclidium 197, 198
Cinclidium frontale 197
Cinclodes albidiventris 24
Cinclodes excelsior 25
Cinclosoma monilegera 106
Cinclosoma setafer 106
Cinclus leucocephalus 29
cinereum, Conirostrum 29
cinereus, Poliolimnas 61
cinnamomea, Pyrrhomyias 28
cinnamomea, Sporophila 4–8, *10*, 11, 12, *14*, *15*, *16*, 17, 18, 20, 23
cinnamomeiventris, Ochthoeca 263
Cinnycerthia unirufa 29
Cinnyris 107
Cinnyris jugularis 186
Cinnyris sericea 107
Cinnyris zenobia 186
cirrhatus, Niseatus *119*
cirrhatus, Spizaetus 118
cirrocephalus, Accipiter 183
Cisticola anonymus 160
Cisticola cherina 109
Cisticola chiniana 109
Cisticola ruficeps 111, 112
Cistothorus platensis 29
citrinella, Carduelis 189–191, *190*
clanga, Aquila 118, *119*, 120
Clypicterus oseryi 247
Clytomyias 297, 298
Clytomyias insignis *296*, 296–298
Cnipodectes subbrunneus 245
Coccyzus americanus 129–132
Coccyzus euleri 128–133
Coccyzus julieni 132
Coeligena lutetiae 28, 252
Coeligena torquata 261
Coeligena violifer 106
Coeligena wilsoni 249, 252
Colibri coruscans 27
collari, Otus 94
collaris, Sporophila 18
Collocalia brevirostris 92
colombica, Thalurania 106
Columba guinea 111, 112
Columba livia 27
Columba mada 186
Columba martinica 111
Colymbus dominicus 111, 113
Conirostrum cinereum 29
Conirostrum sitticolor 29
Conirostrum speciosum 109
connivens, Ninox 99
Conothraupis speculigera 106
Conurus phoenicurus 108
cooki, Apus *88*, 92

Coracias garrulus 110
Coracias Garrulus 110
Coracina 205
Coracina incerta 186
coracinus, Entomodestes 253
coruscans, Colibri 27
Corvus cayanus 111
Corvus meeki 205
Corvus orru 204–206
Corvus unicolor 94
Corvus woodfordi 205
coryphaea, Barbatula 108
coryphaea, Pogoniulus 103, 108
coryphaeus, Cercotrichas 108
coryphaeus, Erythropygia 108
coryphoeus, Sylvia 108
Cossypha 197
Cossypha anomala 197
Cossypha archeri 197
Cossypha caffra 197
Cotinga cayana 111
Cranioleuca erythrops 265
Cranioleuca sulphurifera 106
crassirostris, Charadrius 165–170, *166*, *168*
crassirostris, Heleia 186
crassirostris, Zosterops 186
Crateroscelis murina 186
Crateroscelis rufobrunnea 186
Criniger serinus 110
cristatus, Sakesphorus 235, 238
crucigera, Strix 105, 106
crumenifera, Ciconia 105, 106
crumenifer, Leptoptilos 103, 105
crumenifer, Leptoptilus 105
crumeniferus, Leptoptilos 105, 106
Cryptolopha montis 186
Cryptophaps poecilorrhoa 94
Crypturellus berlepschi 249
cucullata, Tangara 195
cucullatus, Orthotomus 186
Cuculus cayanus 111
Cuculus Vetula 107
cupripennis, Aglaeactis 28
cyanea, Diglossa 265
cyanea, Diglossopis 29
Cyanerpes caeruleus 246
Cyanerpes nitidus 246
cyaneus, Malurus 298
cyanocephalus, Malurus 298
Cyanocorax 123
Cyanocorax cayanus 111
Cyanocorax unicolor 122–124
cyanoleuca, Notiochelidon 29
Cyanolyca turcosa 28
cyanoptera, Anas *69*, 69–71, *70*
cyanopterus, Pterophanes 28
Cyanoptila 198
Cyornis 198
cypriaca, Oenanthe 286
Dacnis cayana 111
dasypus, Delichon 213
decumanus, Psarocolius 244
Delichon dasypus 213
deliciosus, Machaeropterus 252
Dendrexetastes rufigula 106
Dendrobiastes hyperythra 186
Dendrocincla fuliginosa 251
Dendrocolaptes lacrymiger 106
Dendroica dominica 111
denti, Sylvietta 160
deserti, Ammomanes *273*, 284
desmaresti, Tangara 195
diabolicus, Eurostopodus 95
diadema, Catamblyrynchus 30
diadema, Ochthoeca 264
Dicaeum geelvinkianum 187
Dicrurus bracteatus 186
Dicrurus hottentottus 107, 186
Dicrurus remifer 106
difficilis, Empidonax 268
Diglossa caerulescens 261, 264
Diglossa cyanea 265
Diglossa humeralis 29
Diglossa lafresnayii 29
Diglossopis cyanea 29
dignissima, Grallaria 67
Dimorpha monileger 106
discors, Anas 70
disturbans, Androphilus 186
Diuca speculifera 106
dohertyi, Lophozosterops 186
dominica, Anas 111
dominica, Dendroica 111
dominica, Motacilla 111, 113
dominicanus, Larus 107
dominica, Pluvialis 111
dominica, Tanagra 111, 113
dominicus, Anthracothorax 111
Dominicus, Charadrius 111
dominicus, Colymbus 111, 113
dominicus, Dulus 111
dominicus, Nomonyx 111
dominicus, Tachybaptus 111
dominicus, Trochilus 111, 113
dominicus, Turdus 113
Drymoica cherina 109
Drymoica chiniana 109
Dryocopus lineatus 132
Dryoscopus nigerrimus 125
Dubusia taeniata 29
Ducula aenea 103, 105, 107
Dulus dominicus 111
dumasi, Geocichla *173*, 186
dumasi, Zoothera *173*, 186
duperryi, Megapodius 186
Dyaphorophyia blissetti 156
Edoliisoma meyeri 186
Edolius remifer 106
edwardsi, Bangsia 253
edwardsi, Casuarius 55
Egretta sacra 37
Elaenia albiceps 28
Elaenia martinica 111
Emberiza speculifera 106
Empidonax difficilis 268
Empidonax flavescens 266–269, *268*
Empidonax traillii 269
Entomodestes coracinus 253

episcopus, Thraupis 103, 105, 107
Eremobius phoenicurus 108
Erinaceus malaccensis 112
Erithacus rubecula 197
erlangeri, Laniarius 125
Erocnemis vestitus 28
Erythacus 197
erythrogaster, Laniarius 126
Erythromyias buruensis 186
erythrops, Cranioleuca 265
Erythropygia coryphaeus 108
erythropygius, Pteroglossus 252
Erythrura trichroa 103, 105, 106
erythrurus, Terenotriccus 109
euleri, Coccyzus 128–133
Eumyias 198
Euphagus carolinus 111
Euphonia jamaica 111
Eurostopodus diabolicus 95
everetti, Phyllergates 186
everetti, Pnoepyga 186
excelsior, Cinclodes 25
eximia, Buthraupis 29
exsul, Myrmeciza 106
exsul, Myrmelastes 106
Falco pelegrinoides 140
Falco peregrinus 140–153, *147*
Falco sparverius 44, 47
Falco vocifer 106
familiaris, Acrocephalus 36, *37*
fasciata, Rallina 61
fasciatus, Accipiter 186
ferrugineus, Laniarius 125
Ficedula 198
Ficedula bonthaina 186
Ficedula buruensis 186
Ficedula hyperythra 186
Ficedula hypoleuca 106
Ficedula monileger 106
Ficedula moniliger 198
Ficedula solitaris 106
filifera, Hirundo 106
filigera, Ptilotis 106
finschii, Oenanthe 284
flammulatus, Thripadectes 263
flaveola, Capsiempis 109
flavescens, Empidonax 266–269, *268*
flavescens, Picumnus 219
flavicollis, Forpus 221–224
flavirostris, Chlorophonia 253
flaviventer, Xanthotis 106
flavus, Celeus 244
floresii, Selasphorus 257
floris, Acanthopneuste 186
floris, Brachypteryx 186
Formicarius analis 106
Formicarius moniliger 106
Forpus flavicollis 221–224
forstenii, Megapodius 186
fraithi, Himatione 116, 117
fraithii, Himatione 116, 117
Frederickena unduliger 103, 105
Frederickena unduligera 105, 106
freethi, Himatione 116
freethii, Himatione 116
Fringilla bengalus 110, 111
Fringilla Canaria 110, 111
Fringilla jamaica 111, 112
Fringilla ruficollis 18
Fringilla Senegala 111
frontale, Cinclidium 197
Fulica ardesiaca 27
Fulica atrata 61
Fulica Cajanea 111, 112, 114
Fulica martinica 111, 114
fuliginosa, Dendrocincla 251
fulvescens, Picumnus 217–221, *218*, *220*, 234, 235, 236
funebris, Laniarius 126
fuscater, Turdus 28
Galbalcyrhynchus leucotis 244
galeata, Myiagra 186
Gallinula chloropus 59, 61–63
Gallinula phoenicurus 108
gambieri, Halcyon 37
garrula, Certhilauda 110
garrula, Ortalis 110
Garrulax lineatus 106
Garrulax monileger 106
Garrulus argentoratensis 110
Garrulus bohemicus 110
garrulus, Bombycilla 110
garrulus, Coracias 110
garrulus, Lanius 110
garrulus, Lorius 110
garrulus, Phasianus 110
garrulus, Psittacus 110
gayaquilensis, Campephilus 132
geelvinkianum, Dicaeum 187
Geocichla dumasi *173*, 186
Geomalia heinrichi 94
Geophaps plumifera 106
Geotrygon montana 111
Geotrygon purpurata 251
Geotrygon saphirina 251
Geranoaetus melanoleucus 27
gigantea, Melampitta *173*, 186
gigantea, Mellopitta *173*, 186
giganteus, Argus 206, 207
gigas, Patagonia 28
Glaucidium hardyi 48
godlewskii, Anthus 212–217, *214*
goodfellowi, Casuarius 55
gracilirostris, Andropadus 154
Grallaria 68
Grallaria andicola 68
Grallaria dignissima 67
Grallaria guatimalensis 265
Grallaria haplonota 68
Grallaria nuchalis 68
Grallaria quitensis 28, 68
Grallaria ruficapilla 68
Grallaria rufocinerea 67
Grallaria squamigera 67, 67–69
Grallaria watkinsi 68
granti, Sula *203*
grayi, Malurus 298
griseicapillus, Sittasomus 109

griseus, Nyctibius 46
guajana, Pitta 111
Guajanus, Turdus 111
guatimalensis, Grallaria 265
guinea, Columba 111, 112
guineensis, Ovis 112
gularis, Hellmayrea 28, 261, 263
gularis, Paroaria 246
gundlachii, Chordeiles 107
Guttera plumifera 106
guttifer, Accipiter 106
guttifer, Picumnus 106
guttifer, Tarsiger 106
guttifer, Totanus 106
guttifer, Tringa 106
guttuligera, Premnornis 106
guttuligera, Thripophaga 105, 106
guttuliger, Premnornis 103, 105
Gymnocrex rosenbergii 95
Gymnophaps mada 186
haematina, Spermophaga 156
haemorrhous, Cacicus 247
Halcyon chloris 107
Halcyon gambieri 37
Haliaeetus vocifer 106
halophila, Oenanthe 270
haplonota, Grallaria 68
Haplophaedia aureliae 263
hardyi, Glaucidium 48
Harpactes orrhophaeus 107
Harpactes vidua 107
hastata, Aquila 118–122, *119*
heinei, Tangara 264
heinrichi, Geomalia 94
Heleia crassirostris 186
heliaca, Aquila 118, *119*, *120*
Heliangelus strophianus 252, 262
Heliomaster longirostris 241, 243
Hellmayrea gularis 28, 261, 263
Hemipodius lepurana 109
Hemispingus atropileus 29
Hemispingus superciliaris 30
Herpestes javanicus 65
herrani, Chalcostigma 28
Heteropelma amazonum 108, 109
Himatione fraithi 116, 117
Himatione fraithii 116, 117
Himatione freethi 116
Himatione freethii 116
Himatione sanguinea 116
Hirundo filifera 106
Hirundo martinica 111
Hirundo smithii 106
hispanica, Oenanthe 281, 286
hispidus, Phaethornis 243
hodgsoni, Anthus 212
holostictus, Thripadectes 191
hottentottus, Dicrurus 107, 186
humeralis, Diglossa 29
Hylia prasina 157
Hylophylax poecilinotus 107
hyperrhynchus, Notharchus 244
hyperythra, Dendrobiastes 186
hyperythra, Ficedula 186
hypochroma, Sporophila 5
Hypocnemis vidua 107
hypoglauca, Andigena 28
hypoleuca, Ficedula 106
hypoxantha, Sporophila 5, *18*, *19*
ibis, Bubulcus 243
Ibis molucca 111, 114
Illadopsis puveli 157
impennis, Alca 72
imperialis, Campephilus 256, 257
imperialis, Picus 256, 258, 259
incerta, Coracina 186
inexspectata, Tyto 95
inmaculata, Myrmeciza 251
inornata, Catamenia 30
inornatus, Phylloscopus 215
insignis, Clytomyias *296*, 296–298
intermedia, Sporophila 18
ios, Ninox 94, 95, 97, 98, 100
isidori, Oroaetus 27
Ixos plebejus 107
jamaica, Euphonia 111
jamaica, Fringilla 111, 112
jelskii, Ochthoeca 265
jucunda, Pipreola 249, 253
jugularis, Cinnyris 186
julieni, Coccyzus 132
kerearako, Acrocephalus 36, *37*
kirkii, Veniliornis 132
lacrymiger, Dendrocolaptes 106
lacrymiger, Lepidocolaptes 106
Lafresnaya lafresnayi 28
lafresnayii, Diglossa 29
lafresnayi, Lafresnaya 28
Lagonosticta senegala 111
Laniarius aethiopicus 125, *126*, 161
Laniarius (aethiopicus) major 125
Laniarius erlangeri 125
Laniarius erythrogaster 126
Laniarius ferrugineus 125
Laniarius funebris 126
Laniarius leucorhynchus 156
Laniarius mufumbiri 126
Lanius cayanus 111
Lanius Garrulus 110
Lanius Senegalus 111
Larus dominicanus 107
Larus (Dominicanus) vetula 107
Larus serranus 27
latinuchus, Atlapetes 264
latrans, Scytalopus 28
lawrencii, Cichlherminia 199
lawrencii, Turdus 199
leontica, Schistolais 155
Lepidocolaptes lacrymiger 106
Leptasthenura andicola 25
Leptocoma sericea 107
Leptoptilos crumenifer 103, 105
Leptoptilos crumeniferus 105, 106
Leptoptilus crumenifer 105
Leptotila pallida 132
lepurana, Hemipodius 109
lepurana, Ortygis 109
Lepurana, Ortygis 109

leucocephalus, Cinclus 29
leuconyx, Apus *89*, 92
leucopterus, Nyctibius 41–45, 47–53
leucopyga, Oenanthe 273, *279*, 281, 285
leucoramphus, Cacicus 30
leucorhynchus, Laniarius 156
leucotis, Galbalcyrhynchus 244
leucura, Oenanthe 281, 286
lewisii, Ptilopus 107
lherminieri, Cichlherminia 199
libonyana, Merula 109
libonyana, Turdus 103, 109
libonyanus, Turdus 109
limae, Picumnus 234, *235*, 237, 239
linearis, Chiroxiphia 76–80, *77*, *78*
lineatus, Dryocopus 132
lineatus, Garrulax 106
livia, Columba 27
Lobospingus sigillifer 105, 106
Lonchura malacca 111
longirostris, Acrocephalus 34, 36, *37*, *38*
longirostris, Caprimulgus 27
longirostris, Heliomaster 241, 243
longirostris, Nasica 245
Lophozosterops dohertyi 186
Lophozosterops squamiceps 186
Lophozosterops subcristatus 186
Lophozosterops superciliaris 186
Lorius garrulus 110
Loxia malacca 111, 112
Loxia melanocephala 112
lugens, Oenanthe 270–291, *271*, *272*, *279*, *280*, *282*, *283*, *285*
lugentoides, Oenanthe 270, 280
lugubris, Oenanthe 270, 280, 286
lunigera, Calliste 106
luscinius, Acrocephalus 32–40, *37*
lutetiae, Coeligena 28, 252
Lybius vieilloti 161
macconnelli, Mionectes 109
macconnelli, Pipromorpha 109
Machaeropterus deliciosus 252
Machetornis rixosa 245
Macrocephalon maleo 95
macrorhyncha, Pachycephala 186
mada, Columba 186
mada, Gymnophaps 186
mada, Prioniturus 186
magellanica, Carduelis 30
major, Laniarius (aethiopicus) 125
malacca, Lonchura 111
malacca, Loxia 111, 112
malaccensis, Erinaceus 112
maleo, Macrocephalon 95
Malurus 296
Malurus cyaneus 298
Malurus cyanocephalus 298
Malurus grayi 298
mangle, Aramides *200*, 200–202
margaritae, Batis 208–210, *209*
martinica, Chaetura 111
martinica, Columba 111
martinica, Elaenia 111
martinica, Fulica 111, 114
martinica, Hirundo 111
martinica, Muscicapa 111
martinica, Porphyrio 111
martinicus, Porphyrio 103, 114
meeki, Corvus 205
Megapodius duperryi 186
Megapodius forstenii 186
Megascops choliba 105
Melampitta gigantea *173*, 186
Melanerpes carolinus 111
Melanerpes pucherani 132
melanocephala, Loxia 112
melanocephalus, Myioborus 29
melanogaster, Sporophila 5
melanoleucus, Geranoaetus 27
melanopezus, Automolus 244
melanoptera, Metriopelia 27
melanura, Pachycephala 186
melanurus, Passer 107
melanurus, Ramphocaenus 109
Meliphaga vicina 107
Mellopitta gigantea *173*, 186
mendanae, Acrocephalus 36, *37*, *38*
mercenaria, Amazona 107
mercenarius, Amazona 103, 105
mercenarius, Psittacus 105, 107
Merganetta armata 27
Merula libonyana 109
Metallura tyrianthina 28
Metallura williami 28
Metriopelia melanoptera 27
meyeri, Edoliisoma 186
Micrastur mirandollei 243
Micrastur semitorquatus 243
Microeca addita 186
Microeca oscillans 186
Micropsitta pusio 186
microrhynchum, Ramphomichron 28
minuta, Sporophila 5
Mionectes macconnelli 109
Mionectes olivaceus 245
Mirafra cheniana 109
Mirafra phoenicura 108
Mirafra sabota 107
mirandollei, Micrastur 243
molinae, Pyrrhura 108
molucca, Ibis 111, 114
moluccanus, Amaurornis 61
molucca, Threskiornis 111
moluccus, Threskiornis 103, 114
Monarcha vidua 103, 105
Monarcha viduus 107
Monasa morphoeus 244
Monasa nigrifrons 244
monilegera, Cinclosoma 106
monileger, Dimorpha 106
monileger, Ficedula 106
monileger, Garrulax 106
moniliger, Ficedula 198
moniliger, Formicarius 106
montana, Agriornis 28
montana, Brachypteryx 186
montana, Geotrygon 111
montis, Cryptolopha 186

montis, Seicercus 186
**montserrati nom. nov., Turdus lherminieri 199**
morphoeus, Monasa 244
Motacilla aguimp 107
Motacilla caffra 197
Motacilla cayana 111
Motacilla dominica 111, 113
Motacilla Phoenicurus 107, 108
Motacilla vidua 107
mufumbiri, Laniarius 126
murina, Crateroscelis 186
murina, Notiochelidon 29
musae, Acrocephalus 34–36, *37*, *38*, 39
Muscadivores aeneus 105, 107
Muscicapa martinica 111
Muscicapa speculigera 106
Muscicapa surinama 111, 112
Muscipipra vetula 107
Muscisaxicola alpina 24, 26
Myiagra galeata 186
Myiarchus tuberculifer 106
Myioborus melanocephalus 29
Myiomela 198
Myiornis senilis 28
Myiotriccus ornatus 108
Myophoneus 198
Myrmeciza exsul 106
Myrmeciza inmaculata 251
Myrmelastes exsul 106
Myzomela obscura 186
Myzomela simplex 186
Nasica longirostris 245
Nasiterna salvadorii 186
Neochelidon tibialis *193*, 194, 246
Neomorphus radiolosus 249, 251
Nesocichla 199
nigerrimus, Dryoscopus 125
nigricans, Sayornis 28
nigriceps, Turdus 264
nigriceps, Veniliornis 28, 265
nigricollis, Phoenicircus 246
nigrifrons, Monasa 244
nigrocristatus, Basileuterus 29
nigrorufa, Sporophila 5
Niltava 198
Ninox 94–102
Ninox affinis 99
Ninox boobook 99
Ninox burhani 94, 99
Ninox ios 94, 95, 97, 98, 100
Ninox obscura 99
Ninox ochracea 96
Ninox philippensis 99
Ninox punctulata 96, 99
Ninox rudolfi 99
Ninox scutulata 99
Ninox [scutulata] obscura 99
Ninox squamipila 95, 99
Ninox sumbaensis 99
nipalensis, Aquila 118, *119*, *120*
Niseatus cirrhatus *119*
nitens, Trochocercus 157
nitidus, Cyanerpes 246
Nomonyx dominicus 111
Notharchus hyperrhynchus 244
Notiochelidon cyanoleuca 29
Notiochelidon murina 29
novaehollandiae, Accipiter 186
nuchalis, Grallaria 68
nudigula, Pachycephala 186
Numida plumifera 106
Nyctibius bracteatus 41, 42, 46–51
Nyctibius griseus 46
Nyctibius leucopterus 41–53, *43*
Nystactes tamatia 106
obscura, Myzomela 186
occipitalis, Podiceps 27
ochracea, Ninox 96, 98
Ochthodromus wilsonia 167
Ochthoeca cinnamomeiventris 263
Ochthoeca diadema 264
Ochthoeca jelskii 265
Ochthoeca rufipectoralis 28
Oenanthe 273, 285
Oenanthe cypriaca 286
Oenanthe finschii 284
Oenanthe halophila 270
Oenanthe hispanica 281, 286
Oenanthe leucopyga 273, *279*, 281, 285
Oenanthe leucura 281, 286
Oenanthe lugens 270–291, *271*, *272*, *279*, *280*, *282*, *283*, *285*
**Oenanthe lugens warriae, subsp. nov. 273**
Oenanthe lugentoides 270, 280
Oenanthe lugubris 270, 280, 286
Oenanthe persica 270
Oenanthe picata 270, 273, *279*, 280, *282*, *285*, 286, 287
Oenanthe pleschanka 281, *285*
Oenanthe schalowi 270
Oestrus phobifer 103, 104
olivacea, Sylvia 123
olivaceus, Mionectes 245
olivaceus, Peucedramus 122
Oreortyx pictus 106
Oreotrochilus chimborazo 28
orientalis, Acrocephalus *37*
Oriolus chlorocephalus 106
Oriolus sagittata 181
ornatus, Myiotriccus 108
Oroaetus isidori 27
orrhophaeus, Harpactes 107
orru, Corvus 204–206
Ortalis garrula 110
Ortalis vetula 107
Orthotomus cucullatus 186
ortoni, Penelope 249, 250
Ortygis lepurana 109
Ortygis Lepurana 109
Ortyx plumifera 106
oscillans, Microeca 186
oscillans, Rhinomyias 186
oseryi, Clypicterus 247
Otus alfredi 186
Otus choliba 103, 105, 106
Otus collari 94
Ovis guineensis 112
Pachycephala macrorhyncha 186

Pachycephala melanura 186
Pachycephala nudigula 186
Pachyramphus castaneus 109
Pachyramphus surinamus 111
Pachyramphus versicolor 28
pacificus, Apus 81–93, *85*, *86*
Pagolla wilsonia 165
pallida, Leptotila 132
pallidinucha, Atlapetes 30
palustris, Sporophila 4, 5, *17*, *19*, *20*
papuanus, Casuarius 54–58, *56*
Paroaria gularis 246
Parra senegalla 111
parzudakii, Tangara 106
Passer melanurus 107
Patagonia gigas 28
pectoralis, Caprimulgus 106
Pelecanus sinensis 292–294
pelegrinoides, Falco 140
penduliger, Cephalopterus 106
penelope, Anas 42, 53
Penelope ortoni 249, 250
Penelope vetula 107
percernis, Acrocephalus 34–36, *37*, *38*, 39
peregrinus, Falco 140–153, *147*
persica, Oenanthe 270
pertinax, Aratinga 111, 112
Peucedramus olivaceus 122
Peucedramus taeniatus 122, 124
Phaethornis hispidus 243
Phalacrocorax carbo 292–295
Phalcoboenus carunculatus 27
Phasianus argus 206, 207
Phasianus chrysomelas 256
Phasianus garrulus 110
philippensis, Ninox 99
phobifera, Cephenemyia 104
phobifer, Cephenemyia 103
phobifer, Oestrus 103, 104
Phoenicircus nigricollis 246
phoenicura, Ammomanes 108
phoenicura, Mirafra 108
phoenicura, Rhipidura 108
phoenicura, Tyrannula 108
phoenicurus, Amaurornis 62, 63, 108
phoenicurus, Attila 108
phoenicurus, Conurus 108
phoenicurus, Eremobius 108
phoenicurus, Gallinula 108
Phoenicurus, Motacilla 107, 108
phoenicurus, Phoenicurus 108
Phoenicurus phoenicurus 108
Pholidornis rushiae 160
Phrygilus plebejus 107
Phrygilus unicolor 27
Phyllanthus atripennis 158
Phyllastrephus albigularis 154, 161
Phyllastrephus baumanni 154–164, *159*, 161
Phyllergates everetti 186
Phylloscopus inornatus 215
Phylloscopus poliocephalus 186
Phylloscopus presbytes 186
Piaya cayana 111, 244
picata, Oenanthe 270, 273, *279*, 280, *282*, *285*, 286, 287
picta, Pyrrhura 109
pictus, Oreortyx 106
Picumnus albosquamatus 106
Picumnus flavescens 219
Picumnus fulvescens 217–221, *218*, *220*, 234–236
Picumnus guttifer 106
Picumnus limae 234, *235*, 237, 239
Picus carolinus 111
Picus imperialis 256, 258, 259
Piezorhynchus vidua 105, 107
Pionopsitta pulchra 251
Pionus chalcopterus 132
Pipreola jucunda 249, 253
Pipromorpha macconnelli 109
Pisorhina alfredi 186
Pitta guajana 111
plateni, Aramidopsis 95
platensis, Cistothorus 29
Platycichla 199
plebeja, Alauda (Megalophonus) 107
plebejus, Ixos 107
plebejus, Phrygilus 107
plebejus, Turdoides 107
plebejus, Turdus 107
pleschanka, Oenanthe 281, *285*, 286
plumbea, Sporophila 18
plumbeiceps, Poecilotriccus 193
plumbeiceps, Spermophila 18
plumifera, Aegotheles 105, 106
plumifera, Geophaps 106
plumifera, Guttera 106
plumifera, Numida 106
plumifera, Ortyx 106
Pluvialis dominica 111
Pnoepyga everetti 186
Pnoepyga pusilla 186
Podiceps occipitalis 27
poecilinotus, Hylophylax 107
Poecilodryas brachyura 186
poecilorrhoa, Cryptophaps 94
Poecilotriccus capitalis 191, 192, *193*
Poecilotriccus plumbeiceps 193
Pogoniulus coryphaea 103, 108
Pogonocichla stellata 106
Poicephalus senegalus 111
poliocephalus, Phylloscopus 186
poliogaster, Accipiter 241, 243
Poliolimnas cinereus 61
polyosoma, Buteo 27
pomarina, Aquila 118, *119*, *120*
Porphyrio martinica 111
Porphyrio martinicus 103, 114
porphyrio, Porphyrio 59–63, *60*
Porphyrio porphyrio 59–63, *60*
Porzana carolina 111
prasina, Hylia 157
Premnornis guttuliger 103, 105
Premnornis guttuligera 106
presbytes, Phylloscopus 186
Prioniturus mada 186
promeropirhynchus, Xiphocolaptes 249, 252
Psaracolius viridis 247

Psarocolius angustifrons 244
Psarocolius decumanus 244
Pseudalethe 197
Pseudobulweria aterrima 64–66, *65*
Psittacus garrulus 110
Psittacus mercenarius 105, 107
Psittacus Senegalus 111
Pterocles senegallus 111
Pterodroma baraui 65
Pteroglossus erythropygius 252
Pterophanes cyanopterus 28
Ptilinopus viridis 107
Ptilopus lewisii 107
Ptilotis 107
Ptilotis analoga 107
Ptilotis filigera 106
pucherani, Melanerpes 132
pulchra, Pionopsitta 251
punctulata, Ninox 96, 99
punctuliger, Thamnophilus 106
purpurata, Geotrygon 251
pusilla, Pnoepyga 186
pusio, Micropsitta 186
puveli, Illadopsis 157
Pycnonotus barbatus 155
pyrrholeuca, Asthenes *134*, 134–136
Pyrrhomyias cinnamomea 28
Pyrrhura molinae 108
Pyrrhura picta 109
quitensis, Grallaria 28, 68
radiolosus, Neomorphus 249, 251
Rallina fasciata 61
Rallus carolinus 111
ramphastinus, Semnornis 265
Ramphocaenus melanurus 109
Ramphocelus bresilius 111
Ramphomichron microrhynchum 28
rapax, Aquila 118, *119*, *120*
reinwardtii, Reinwardtoena 186
Reinwardtoena reinwardtii 186
remifer, Dicrurus 106
remifer, Edolius 106
resplendens, Vanellus 27
Rhinomyias 198
Rhinomyias additus 186
Rhinomyias oscillans 186
Rhipidura phoenicura 108
Rhipidura rufiventris 107
Rhipidura superflua 186
Rhipidura vidua 107
richardii, Anthus 213
rimitarae, Acrocephalus 36, *37*
Rissa tridactyla 42
rixosa, Machetornis 245
rosenbergii, Gymnocrex 95
Rostrhamus sociabilis 202–204, *203*
rubecula, Erithacus 197
rubrocristatus, Ampelion 28
rudolfi, Ninox 99
ruficapilla, Grallaria 68
ruficeps, Cisticola 111, 112
ruficollis, Fringilla 18
ruficollis, Sporophila 4–23, *9*, *13*, *14*
ruficollis, Stelgidopteryx 265
rufigula, Dendrexetastes 106
rufigularis, Sclerurus 245
rufipectoralis, Ochthoeca 28
rufipileatus, Automolus 244
rufitorques, Turdus 123
rufiventris, Rhipidura 107
rufobrunnea, Crateroscelis 186
rufocinerea, Grallaria 67
rufulus, Anthus 214
rufus, Tachyphonus 246
rushiae, Pholidornis 160
ruwenzorii, Caprimulgus 106
sabota, Mirafra 107
sacra, Egretta 37
sagittata, Oriolus 181
Sakesphorus cristatus 235, 238
salimali, Apus *88*, 92
salvadorii, Nasiterna 186
sanguinea, Himatione 116
saphirina, Geotrygon 251
Saurothera vetula 107
Sayornis nigricans 28
schalowi, Oenanthe 270
Schiffornis turdina 103, 108, 109
schistaceus, Atlapetes 30
Schistochlamys speculigera 106
Schistolais leontica 155
schrankii, Tangara 194, 195
Sclerurus rufigularis 245
scutulata, Ninox 99
[scutulata] obscura, Ninox 99
Scytalopus latrans 28
Seicercus montis 186
Selasphorus floresii 257
semitorquatus, Micrastur 243
Semnornis ramphastinus 265
Senegala, Fringilla 111
senegala, Lagonosticta 111
senegalla, Parra 111
senegallus, Pterocles 111
senegallus, Tetrao 111
senegallus, Vanellus 111
Senegalus, Lanius 111
senegalus, Poicephalus 111
Senegalus, Psittacus 111
senegalus, Tchagra 111
senilis, Myiornis 28
sericea, Cinnyris 107
sericea, Leptocoma 107
serinus, Calyptocichla 103
Serinus canaria 111
serinus, Criniger 110
serranus, Larus 27
setafer, Cinclosoma 106
Sheppardia 197
sigillifer, Lobospingus 105, 106
simplex, Chlorocichla 157
simplex, Myzomela 186
sinensis, Pelecanus 292–294
Siphia bonthaina 186
Sittasomus amazonus 109
Sittasomus griseicapillus 109
sitticolor, Conirostrum 29
smithii, Hirundo 106

sociabilis, Rostrhamus 202–204, *203*
solitaris, Ficedula 106
solstitialis, Troglodytes 29
somadikartai, Zosterops 94
sororcula, Tyto 186
sparverius, Falco 44, 47
speciosa, Ateleodacnis 109
speciosum, Conirostrum 109
speculifera, Diuca 106
speculifera, Emberiza 106
speculigera, Conothraupis 106
speculigera, Muscicapa 106
speculigera, Schistochlamys 106
Spermophaga haematina 156
Spermophilae 4
Spermophila plumbeiceps 18
Spilospizias trinotatus 186
Spizaetus cirrhatus 118
Sporagra yarrellii *235*, 238, 239
Sporophila bouvreuil 5, 12, *20*
Sporophila caerulescens 12
Sporophila 'caraguata' 20
Sporophila 'caraguata' 20
Sporophila castaneiventris 5
Sporophila cinnamomea 4–8, *10*, 11, *14–18*, *20*
Sporophila collaris 18
Sporophila hypochroma 5
Sporophila hypoxantha 5, *18*, *19*
Sporophila intermedia 18
Sporophila melanogaster 5
Sporophila minuta 5
Sporophila nigrorufa 5
Sporophila palustris 4, 5, *17*, *19*, *20*
Sporophila plumbea 18
Sporophila ruficollis 4–23, *9*, *13–15*
Sporophila zelichi 4, 5, 8, *17*, *19*, *20*
squamiceps, Chlorocharis 186
squamiceps, Lophozosterops 186
squamigera, Grallaria 67–69
squamipila, Ninox 95, 99
stanleyi, Chalcostigma 28
Stelgidopteryx ruficollis 265
stellata, Pogonocichla 106
stentoreus, Acrocephalus *37*
Stiphrornis 197
stolzmanni, Tyranneutes 246
strigilatus, Ancistrops 245
Strix cayelii 186
Strix crucigera 105, 106
strophianus, Heliangelus 252, 262
subbrunneus, Cnipodectes 245
subcristatus, Lophozosterops 186
submoniliger, Anthipes 106
Sula granti *203*
sulphurifera, Cranioleuca 106
sulphurifera, Synallaxis 106
sumbaensis, Ninox 99
superciliaris, Camaroptera 156
superciliaris, Hemispingus 30
superciliaris, Lophozosterops 186
superciliaris, Zosterops 186
superflua, Rhipidura 186
surinama, Muscicapa 111, 112
surinamus, Pachyramphus 111
surinamus, Tachyphonus 111
surinamus, Turdus 111, 112
sylvaticus, Turnix 103, 109
Sylvia coryphoeus 108
Sylvia olivacea 123
Sylvia taeniata 122, 123, 124
Sylvietta denti 160
Sylvietta virens 156
Synallaxis beverlyae 42
Synallaxis sulphurifera 106
Tachybaptus dominicus 111
Tachyphonus rufus 246
Tachyphonus surinamus 111
taeniata, Dubusia 29
taeniata, Sylvia 122–124
taeniatus, Peucedramus 122, 124
taiti, Acrocephalus 36
tamatia, Bucco 106
tamatia, Nystactes 106
Tanagra bresilia 111
Tanagra cayana 111
Tanagra dominica 111, 113
Tangara cayana 111
Tangara chilensis 195
Tangara cucullata 195
Tangara desmaresti 195
Tangara heinei 264
Tangara parzudakii 106
Tangara schrankii *193*, 194, 195
Tangara vitriolina 29
Tarsiger 198
Tarsiger guttifer 106
Tchagra senegalus 111
Telophorus zeylonus 111
tenuepunctatus, Thamnophilus 192
Terenotriccus erythrurus 109
Tetraogallus tibetanus 106
Tetrao senegallus 111
Thalassarche chlororhynchos 42
Thalurania colombica 106
Thamnophilus aethiops 106
Thamnophilus punctuliger 106
Thamnophilus tenuepunctatus 192
Thamnophilus unduliger 105, 106
Thraupis episcopus 103, 105, 107
Threskiornis molucca 111
Threskiornis moluccus 103, 114
Thripadectes flammulatus 263
Thripadectes holostictus 191
Thripophaga guttuligera 105, 106
Thripophaga sp. nov. 42
tibetanus, Tetraogallus 106
tibialis, Neochelidon *193*, 194, 246
Tityra cayana 111
Todiramphus chloris 107
torquata, Coeligena 261
Totanus guttifer 106
traillii, Empidonax 269
trichroa, Erythrura 103, 105, 106
tricolor, Atlapetes 261, 264
tridactyla, Rissa 42
Tringa guttifer 106
trinotatus, Accipiter 186
trinotatus, Spilospizias 186

trivialis, Anthus 213
Trochilus dominicus 111, 113
Trochilus violifer 106
Trochocercus nitens 157
Troglodytes solstitialis 29
tuberculifer, Myiarchus 106
tuberculifer, Tyrannus 106
turcosa, Cyanolyca 28
turdina, Schiffornis 103, 108, 109
turdoides, Cataponera 186
Turdoides plebejus 107
Turdus 199
Turdus Cajaneus 112
Turdus Carolinus 111
Turdus dominicus 113
Turdus fuscater 28
Turdus Guajanus 111
Turdus lawrencii 199
**Turdus lherminieri montserrati nom. nov. 199**
Turdus libonyana 103, 109
Turdus libonyanus 109
Turdus nigriceps 264
Turdus plebejus 107
Turdus rufitorques 123
Turdus surinamus 111, 112
Turdus zeylonus 111
Turnix sylvaticus 103, 109
Tyranneutes stolzmanni 246
tyrannina, Cercomacra 107
Tyrannula phoenicura 108
Tyrannus tuberculifer 106
tyrianthina, Metallura 28
Tyto 95
Tyto alba 27
Tyto inexspectata 95
Tyto sororcula 186
unappendiculatus, Casuarius 54
unduligera, Frederickena 105, 106
unduliger, Frederickena 103
unduliger, Thamnophilus 105, 106
unicolor, Aphelocoma 123
unicolor, Corvus 94
unicolor, Cyanocorax 122–124
unicolor, Phrygilus 27
unirufa, Cinnycerthia 29
Uraeginthus bengalus 111
Urogalba amazonum 109
Vanellus cayanus 111
Vanellus resplendens 27
Vanellus senegallus 111
Veniliornis callonotus 132
Veniliornis kirkii 132
Veniliornis nigriceps 28, 265
versicolor, Pachyramphus 28
vestitus, Erocnemis 28
Vetula, Cuculus 107
vetula, Larus (Dominicanus) 107
vetula, Muscipipra 107
vetula, Ortalis 107
vetula, Penelope 107
vetula, Saurothera 107
vicina, Meliphaga 107
vidua, Harpactes 107
vidua, Hypocnemis 107
vidua, Monarcha 103, 105
vidua, Motacilla 107
vidua, Piezorhynchus 105, 107
vidua, Rhipidura 107
viduus, Monarcha 107
vieilloti, Lybius 161
violifer, Coeligena 106
violifer, Trochilus 106
virens, Andropadus 155
virens, Sylvietta 156
virginianus, Chordeiles 107
viridis, Psaracolius 247
viridis, Ptilinopus 107
vitriolina, Tangara 29
vocifer, Aedicnemus 106
vocifer, Falco 106
vocifer, Haliaeetus 106
**warriae, subsp. nov., Oenanthe lugens 273**
watkinsi, Grallaria 68
westermanni, Casuarius 54, 55, 58
williami, Metallura 28
wilsonia, Charadrius 165–170
wilsonia, Ochthodromus 167
wilsonia, Pagolla 165
wilsoni, Coeligena 249, 252
wolfi, Aramides 210, 211, 249, 250
woodfordi, Corvus 205
wyatti, Asthenes 263
xanthophthalmus, Agelasticus 241, 247
Xanthotis flaviventer 106
Xiphocolaptes promeropirhynchus 249, 252
yarrellii, Sporagra *235*, 238, 239
zelichi, Sporophila 4, 5, 8, *17*, *19*, *20*
Zenaida auriculata 27
zenobia, Cinnyris 186
zeylonus, Telophorus 111
zeylonus, Turdus 111
Zonotrichia capensis 30, 246
Zoothera dumasi *173*, 186
Zosterops crassirostris 186
Zosterops somadikartai 94
Zosterops superciliaris 186

# CORRECTIONS TO TEXT

| | | |
|---|---|---|
| Page 34 | last line | *Orthotomus cucullatus* not *Orthotomus cuculatus* |
| Page 81 | lines 1–2 | 'Taxonomy of the Pacific Swift *Apus pacificus* (Latham, 1802)' complex not 'Taxonomy of the Pacific Swift *Apus pacificus* Latham, 1802, complex' |
| Page 92 | line 23 | '*Apus pacificus* (Latham, 1802)' not '*Apus pacificus* Latham, 1801' |
| Page 92 | line 24 | 'subspecies *kurodae* (Domaniewski, 1933)' not subspecies '*kurodae* Domaniewski, 1933' |
| Page 92 | line 26 | '*Apus leuconyx* (Blyth, 1845)' not '*Apus leuconyx* Blyth, 1845' |
| Page 92 | line 27 | '*Apus cooki* (Harrington, 1913)' not '*Apus cooki* Harrington, 1913' |

**BOC Office**
P.O. Box 417, Peterborough PE7 3FX, UK
E-mail: boc.office@bou.org.uk. Website: www.boc-online.org
Tel. & Fax: +44 (0)1733 844 820.

## MEMBERSHIP

**Subscriptions were due for renewal on 1 January 2011.**

**Please note that a single subscription rate (£25 from 2012) applies regardless of whether the subscriber is a member of the BOU or not.**

All paid-up members receive (postage free) four issues of the *Bulletin* (including index).

**Membership correspondence** and **applications** for membership, changes of address and all other membership related items should be addressed to the BOC Office (above). No registered items should be sent to the P.O. Box. Contact BOC Office for direct mail of such items. For general Club correspondence see below.

## INSTITUTIONAL SUBSCRIBERS & APPLICATIONS FOR BACK NUMBERS OR OTHER CLUB PUBLICATIONS

The *Bulletin*, together with annual index, may be purchased (postage free) by Institutional Subscribers, on payment of an annual subscription of **£50** to the BOC Office (above) or via the BOC website (www.boc-online.org). Back issues of the *Bulletin* are available from the BOC Office (above). BOC Occasional Publications and other BOC publications are available from the BOC Office or online from the BOC website (www.boc-online.org).

Ideas for future publications should be referred direct to: **Dr D. R. Wells, BOU/BOC Commissioning Editor, c/o BOC Office, P.O. Box 417, Peterborough, PE7 3FX, UK.**

## PAYMENTS

All amounts quoted are net, should be paid in £ Sterling and sent to the BOC Office (above). Other currencies are not accepted. Other currency users can pay by credit card from which the Sterling amount will be deducted and the amount in your local currency will be indicated on your card statement. All cheques or drafts should be made payable to **British Ornithologists' Club**. Direct bank transfers can be made to CAF Bank Ltd, 25 Kings Hill Avenue, Kings Hill, West Malling, Kent, ME19 4JQ. Sort Code: 40-52-40. Account no: 00018536, with confirmation to the BOC Office (above).

## CLUB CORRESPONDENCE

Correspondence on all general Club matters should be addressed to the Hon. Secretary, Dr R. P. (Robert) Prŷs-Jones, Bird Group, Dept. of Zoology, Natural History Museum, Akeman Street, Tring HP236AP, UK (e-mail: r.prys-jones@nhm.ac.uk).

See inside front cover for details of Club meetings.

## COMMITTEE

Miss H. Baker (*Chairman*) (2009)
D. J. Fisher (*Vice-Chairman*) (2011)
Dr R. P. Prŷs-Jones (*Hon Secretary*) (2011)
D. J. Montier (*Hon. Treasurer*) (1997)
S. M. S. Gregory (2009)
K. Heron Jones (2009)
R. R. Langley (2011)
C. W. R. Storey (2009)
M. J. Walton (2008)

***Ex-officio* members**
*Hon. Editor*: G. M. Kirwan (1 January 2004)
*Chairman of BOU/BOC Joint Publications Committee* (JPC): S. P. Dudley
*Administration Manager*: S. P. Dudley (2005)
*BOU/BOC Commissioning Editor*: Dr D. R. Wells (2009)

Registered Charity No. 279583

**Bulletin of the British Ornithologists' Club**
ISSN 0007–1595
**Edited by Guy M. Kirwan**
**Associate Editor: Frank D. Steinheimer**
Volume 131, Number 4, pages 225–316

Club Announcements ..... 225

SILVA, M., ALBUQUERQUE FRANÇA, B. R., LIMA HAGI, L. Y. G., NETO, M. R., OLIVEIRA, D. V. & PICHORIM, M. New sites and range extensions for endemic and endangered birds in extreme north-east Brazil ..... 234

BUITRÓN-JURADO, G. Interesting distributional records of Amazonian birds from Pastaza, Ecuador ..... 241

SOLANO-UGALDE, A. Notes on the distribution and natural history of bird species in the Chocó bioregion of Ecuador ..... 249

PRŶS-JONES, R. P. Type specimens of the Imperial Woodpecker *Campephilus imperialis* (Gould, 1832) 256

BONACCORSO, E., ARZUZA, D., BUITRÓN-JURADO, G., CHARPENTIER, A. L., JUIÑA, M., PIEDRAHÍA, P. & FREILE, J. F. Range extensions and other noteworthy bird records from the Ecuadorian Andes ..... 261

MARÍN, M. On the breeding biology of Yellowish Flycatcher *Empidonax flavescens* in Costa Rica ..... 266

SHIRIHAI, H., KIRWAN, G. M. & HELBIG, A. J. A new taxon in the Mourning Wheatear *Oenanthe lugens* complex ..... 270

MLÍKOVSKÝ, J. The authorship and type locality of *Phalacrocorax carbo sinensis* ..... 292

WOXWOLD, I. A. & CROME, F. H. J. First description of the nest and egg of Orange-crowned Fairy-wren *Clytomyias insignis*, from the southern highlands of Papua New Guinea ..... 296

Index for Volume 131 (2011) ..... 299

**EDITORIAL BOARD**

Murray Bruce, R. T. Chesser, Edward C. Dickinson, Françoise Dowsett-Lemaire, Steven M. S. Gregory, José Fernando Pacheco, Robert B. Payne, Pamela C. Rasmussen, Cees Roselaar, Thomas S. Schulenberg, Lars Svensson

Authors are invited to submit papers on topics relating to the broad themes of taxonomy, nomenclature and distribution of birds. Descriptions of new species are especially welcome and will be given priority to ensure rapid publication, subject to successful passage through the normal peer review procedure, and wherever possible should be accompanied by colour photographs or paintings. On submission, manuscripts, **double-spaced** and with **wide margins**, should be sent to the Editor, Guy Kirwan, by e-mail, to GMKirwan@aol.com. Alternatively, **two copies** of manuscripts, typed on one side of the paper, may be submitted to the Editor, 74 Waddington Street, Norwich NR2 4JS, UK. Review, return of manuscripts for revision and subsequent stages of the publication process will be undertaken electronically.

For instructions on style, see the inside rear cover of Bulletin 131(1) or the BOC website.

Registered Charity No. 279583
© British Ornithologists' Club 2011
**www.boc-online.org**

Printed on acid-free paper.
Published by the British Ornithologists' Club
Typeset by Alcedo Publishing of Arizona, USA, and printed by Latimer Trend, UK